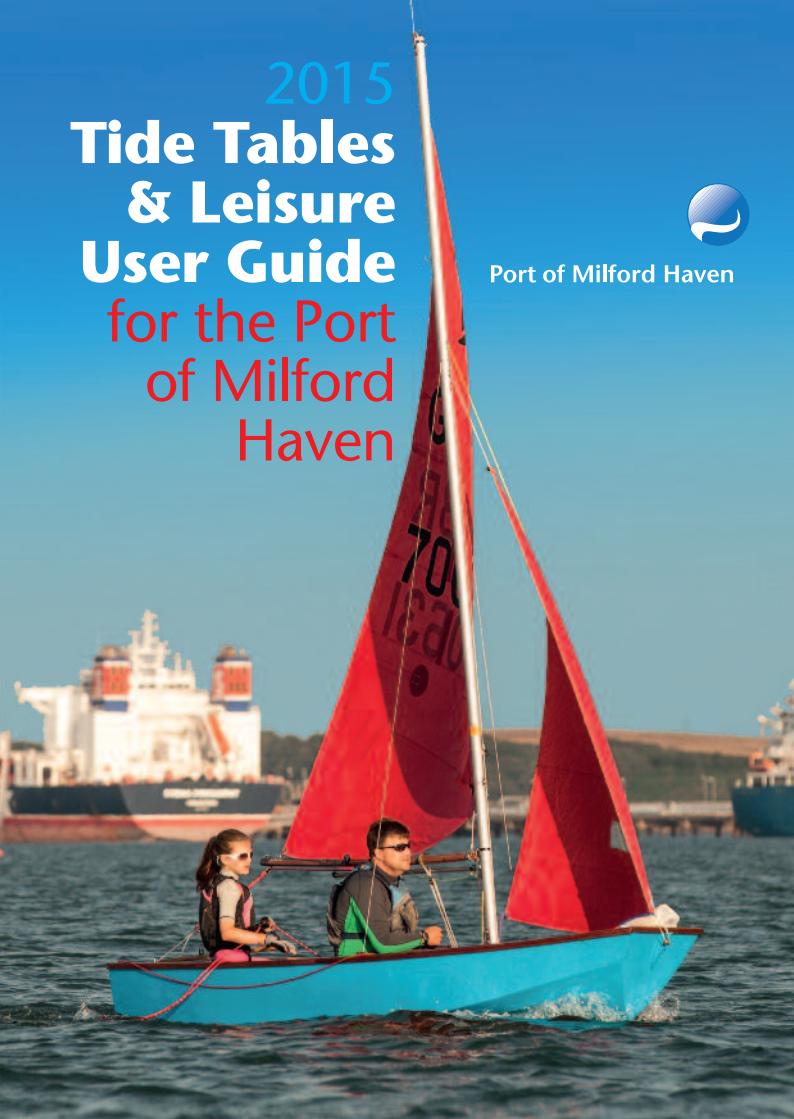
2015

Tide Tables & Leisure User Guide

for the Port of Milford Haven

Port of Milford Haven



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Port of Milford Haven

2015 Tide Tables for the Port of Milford Haven

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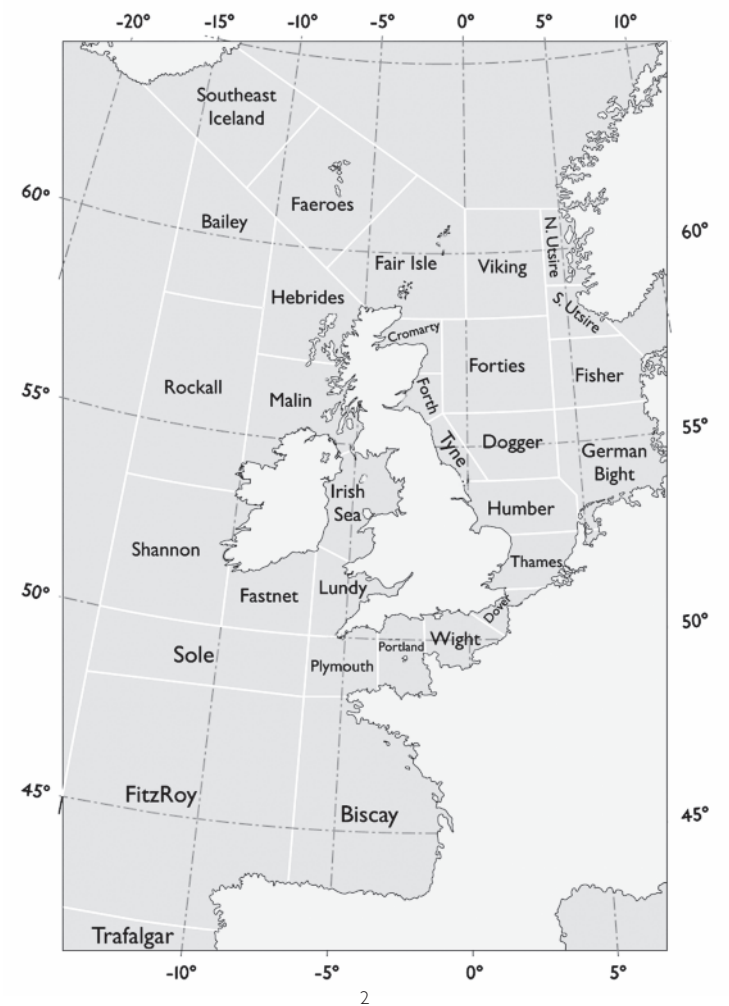
Shipping Weather Forecast Areas



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Cover image: Alex Brown/ Pembrokeshire Yacht Club

General Information

Tidal predictions for Milford Haven have been computed by the Proudman Oceanographic Laboratory, Copyright Reserved.

The time is mean time of the meridian of Greenwich. The heights are referred to the datum of the largest scale Admiralty chart of the Port and should be added to the depths given on the chart. The datum is 3.71 m. (12.17ft.) below Ordnance Datum for Mean Sea Level (Newlyn) or zero of the automatic tide gauge at the Port Authority Jetty.

The information published in this booklet is provided to assist shipping using the Haven, and while every endeavour is made to ensure that it is accurate, the Port of Milford Haven accepts no responsibility for any errors it may contain or for loss or damage of whatever description arising directly or indirectly from matter contained therein.

The rates covering Conservancy Charges, Mooring Charges and Pilotage Charges can be obtained from the Port of Milford Haven

Time Differences of High and Low Water at Other Locations

Milford Haven	High Water at 0100 and 1300	High Water at 0800 and 2000	Low Water at 0100 and 1300	Low Water at 0700 and 1900
Fishguard	+0115	+0100	+0110	+0135
Porthgain	+0055	+0045	+0045	+0100
Ramsey Sound	+0030	+0030	+0030	+0030
Solva	+0015	+0010	+0035	+0015
Little Haven	+0010	+0010	+0025	+0015
Martins Haven	+0010	+0010	+0015	+0015
Skomer Island	- 0005	- 0005	+0005	+0005
Dale Roads	- 0005	- 0005	- 0008	- 0008
Neyland	+0002	+0010	0000	0000
Llangwm	+0010	+0020	+0005	0000
Haverfordwest	+0010	+0025	—NO DATA—	
Stackpole Quay	-0005	+0025	-0010	-0010
Tenby	-0015	- 0010	- 0015	- 0020

Predictions for tides which fall between the times given may be obtained by interpolation between the columns. The difference should be added to or subtracted from the prediction given in the Tide Tables.

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Table of Distances

Table of distances from entrance of Haven along centre of navigable channel in nautical miles.

Mid Channel Rock Buoy	0
Angle Buoy	2.01
South Hook Jetty (West End)	3.93
Murco Jetty (West End)	4.81
Valero Jetty (West End)	5.13
Milford Docks Entrance Channel	5.92
Newton Noyes Pier	6.64
Dragon Jetty (West End)	7.07
Wear Spit	7.95
Carr Spit Beacon	8.63
Neyland Spit Buoy	9.35
Cleddau Bridge	9.98

Milford Haven Port Control Concise Guide

Ship movements are coordinated by the Port of Milford Haven's Port Control based at Hubberston Point, Position Lat. 51° 42.5' N, Long. 05° 03' W (approx).

Call sign "Milford Haven Port Control" with a continuous listening watch kept on VHF channel 12, the port frequency, as well as channels 11, 14 and 16.

Pilot and Patrol Launches maintain a continuous listening watch on channels 11 and 12.

It is mandatory for all vessels over 20 metres in length operating in Milford Haven and the approaches to report to Port Control

Vessels inward bound

Vessels must send ETA at least 12 hours in advance to Port Control with any subsequent amendments at least two hours before arrival.

When within one hour of St Ann's Head, vessels must contact Port Control on VHF channel 12 and must subsequently maintain watch on channel 12. Vessels with any damage, or suspected damage, must advise Port Control and obtain permission to enter.

Vessels towing

Vessels towing must provide a tow plan and obtain permission from Port Control to enter. Towage guidelines can be found at www.mhpa.co.uk

Passage Plans

Vessels of 50 metres or more in length wishing to enter, depart or navigate within the area of jurisdiction of the Port of Milford Haven shall prepare a passage plan and declare such to Port Control prior to each movement commencing.

Vessels underway within the Haven

Vessels underway within the Haven must maintain a continuous listening watch on VHF channel 12.

Reporting vessels over 20 metres in length should report at the various reporting points across the Haven.

Vessels Anchoring

Vessels brought up in an anchorage must report to Port Control and whilst at anchor, must maintain a continuous listening watch on VHF channels 12 and 16. Vessels at anchor will not be permitted to take on bunkers or immobilise main engines without the permission of the Harbourmaster.

Vessels Outward Bound

Vessels must report to Port Control prior to getting underway from berth or anchorage and maintain a continuous listening watch on VHF channel 12 until clearing port limits.

Harbour Surveillance radar

The Port of Milford Haven operates a VTS traffic organisation service which includes harbour surveillance radar covering Milford Haven up to the Cleddau Bridge and seaward approaches for ranges up to 6 miles.

Berthing Channels

VHF channels 15 and 9 have been allocated for berthing and unberthing operations within the main body of the Haven for use by ships, tugs, mooring boats and jetty. The channel allocation is as follows: North shore primary 9, secondary 15. South shore primary 15, secondary 9.

Exclusion Zones

Any information regarding the introduction and enforcement of exclusion zones will be duly notified through Notice to Mariners and on our website www.mhpa.co.uk

Milford Haven Port Authority Selected Byelaws

B/L20 Vessels to be Navigated with Care:

A vessel shall not be navigated or manoeuvred within the Haven in such a manner or at such speed as will or may:

- Cause damage to any lock gate, sea wall, jetty or other property within the Haven
- Cause damage, inconvenience or interruption to dredgers or other craft working within the Haven
- Cause damage, danger or inconvenience to other users of the Haven

B/L22 As to Fairway:

No vessel (whether sailing or power-driven) which is not confined to a channel by a reason of its draught, shall make use of that channel in such a way as to cause obstruction to any other vessel (whether sailing or power driven) which is confined to that channel by reason of its draught.

B/L24 Recognised Landing Place not to be Obstructed:

A master shall not place his vessel or allow it to be in such a situation as to obstruct or interfere with the access to any recognised landing place in the Haven.

B/L27 Unauthorised Vessels not to Approach Petroleum Berth:

Except with the permission of the Harbourmaster no vessel other than a petroleum ship, a vessel engaged in the mooring, unmooring and berthing operations of a petroleum ship or a vessel engaged in supplying or servicing a petroleum ship shall enter or navigate within 100 metres of a petroleum berth or a petroleum ship moored thereto.

B/L29 Water-skiing and Aqua-planing

A person shall not without the permission of the Harbourmaster engage or take part in water-skiing or aqua-planing, para-kiting or any similar airborne or waterborne activities in the Haven except in such areas as the Harbourmaster may designate and in accordance with such reasonable conditions as he may impose.

B/L30 Navigating Whilst Drunk

A person shall not navigate any vessel within the Haven whilst under the influence of drink or drugs to such an extent as to be incapable of taking proper control of the vessel.

B/L56 Acts Affecting Safety of Navigation

A person shall not do any act or thing injuriously affecting the safety of navigation within the Haven.

Full details of the Milford Haven Byelaws 1984 are available at www.mhpa.co.uk

Selected International Regulations for Preventing Collision at Sea 1972 (with 1995 amendments)

Rule 5 Every vessel shall at all times maintain proper lookout by sight and hearing as well as by all available means appropriate to the prevailing circumstances and conditions so as to make a full appraisal of the situation and or risk of collision.

Rule 6 Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid a collision and be stopped within a distance appropriate to the prevailing conditions.

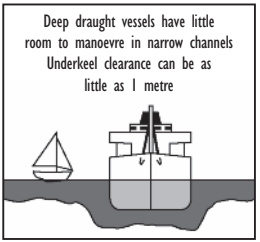
Rule 9(b) A vessel of less than 20m in length or a sailing vessel shall not impede the passage of a vessel which can safely navigate only within a narrow channel or fairway.

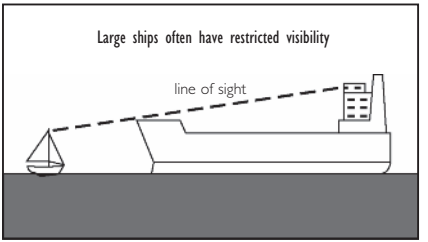
Rule 13 Any vessel overtaking any other shall keep out of the way of the vessel being overtaken.

Rule 14(a) When two power-driven vessels are meeting on reciprocal courses so as to involve risk of collision each shall alter her course to starboard so that each shall pass on the port side of each other.

Rule 18(a) A power-driven vessel underway shall keep out of the way of:
iv) a sailing vessel

Rule 18(a)(b) A vessel underway shall keep out of the way of:
i) a vessel not under command
ii) a vessel restricted in her ability to manoeuvre
iii) a vessel engaged in fishing





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Beaufort Wind Scale

Force	Wind Speed (Knots)	Description	Sea
0	Less than 1	Calm	Sea like a mirror
1	1-3	Light Air	Ripples without foam crests
2	4-6	Light Breeze	Small wavelets. Crests do not break
3	7-10	Gentle Breeze	Large wavelets. Crests begin to break
4	11-16	Moderate Breeze	Small waves. Fairly frequent white horses
5	17-21	Fresh Breeze	Moderate waves.Many white horses
6	22-27	Strong Breeze	Large waves. White foam crests everywhere.
7	28-33	Near Gale	Sea heaps up. White foam begins to be blown in streaks.
8	34-40	Gale	Moderately high waves of greater length. Foam blown in well-marked streaks.
9	41-47	Strong Gale	High waves. Dense streaks of foam. Crests begin to roll over. Spray may affect Visibility.
10	48-55	Storm	Very high waves with long overhanging crests. Great patches of foam in dense white streaks. Sea surface white. Tumbling of sea becomes heavy. Visibility affected.
11	56-63	Violent Storm	Exceptionally high waves. Small and medium sized ships may be lost to view. Sea completely covered with foam. Visibility affected.
12	more than 64	Hurricane	Sea completely white with driving spray. Air filled with foam and spray. Visibility very seriously affected.

Table of Distances from Milford Haven

Approximate navigable distances in nautical miles from Milford Haven:

Aberdeen (N)	643	London Bridge	487
Amsterdam	556	Liverpool	188
Antwerp	533	Londonderry	280
Ardrossan	248	Manchester	223
Avonmouth	99	Medway	451
Barry	77	Middlesborough	666
Belfast	215	Mongstad (Bergen)	827
Cardiff	84	Newcastle	690
Cork	129	Newport	94
Douglas	174	New York	2992
Dover	396	Orkneys	513
Drogheda	155	Peel (Douglas IOM)	178
Dublin	123	Plymouth	173
Falmouth	140	Poole	270
Fawley	292	Portland	250
Fishguard	56	Portsmouth (Needles)	313
Foynes	305	Qatar (Doha)	6213
Galway	360	Rosslare	70
Glasgow	296	Rotterdam	528
Gothenburg	1030	Shannon (Foynes)	318
Grangemouth (N)	740	Shetland	611
Grangemouth (S)	802	Shoreham	350
Gravesend	466	Southampton (Needles)	316
Great Yarmouth	494	Stanlow	207
Harwich	460	Statfjord Field	760
Heysham	190	Sture (Bergen)	827
Immingham	594	Sunderland	676
Inverness	624	Swansea	55
Jersey (St Helier)	262	Teesport	666
Larne	212	Terneusen	495
Le Havre	336	Thames (Thameshaven)	460
Leith (N) (Braefoot Bay)	728	Tivoli (Cork)	139
Leixoes	679	Whitegate	127
Limerick	328	Workington	194

Exceptional tides for 2015

(1) Astronomical predictions for 2015 show that High Water levels of 7.3 metres (23.8 feet) and above occur on the following dates:

Date	Time	Metres	Feet
21 January	06.33	7.4	24.4
21 January	18.57	7.4	24.1
22 January	07.20	7.6	25.1
22 January	19.43	7.4	24.4
23 January	08.06	7.7	25.2
23 January	20.28	7.3	24.1
24 January	08.51	7.5	24.7
19 February	06.18	7.5	24.8
19 February	18.42	7.5	24.6
20 February	07.03	7.8	25.6
20 February	19.26	7.6	25.0
21 February	07.48	7.8	25.7
21 February	20.09	7.6	24.8
22 February	08.31	7.7	25.2
22 February	20.51	7.3	23.9
23 February	09.15	7.3	24.0
20 March	05.57	7.6	24.8
20 March	18.21	7.5	24.7
21 March	06.43	7.8	25.5
21 March	19.05	7.7	25.1
22 March	07.27	7.8	25.6
22 March	19.47	7.6	24.9
23 March	08.09	7.6	25.0
23 March	20.28	7.3	24.1
18 April	05.35	7.4	24.3
18 April	17.58	7.4	24.2
19 April	06.21	7.6	24.9
19 April	18.42	7.5	24.6
20 April	07.05	7.6	24.8
20 April	19.24	7.5	24.5
21 April	07.48	7.4	24.2
1 August	18.55	7.4	24.4
2 August	07.18	7.3	23.9
2 August	19.40	7.6	24.8
3 August	08.03	7.3	23.9
3 August	20.25	7.5	24.6
4 August	21.11	7.3	23.9
29 August	17.51	7.4	24.3
30 August	06.15	7.4	24.2
30 August	18.36	7.7	25.3
31 August	07.00	7.6	24.8
31 August	19.21	7.8	25.7
1 September	07.43	7.6	24.8
1 September	20.06	7.7	25.4
2 September	08.27	7.4	24.3
2 September	20.50	7.4	24.4
27 September	17.30	7.5	24.7
28 September	05.54	7.5	24.6
28 September	18.15	7.8	25.7
29 September	06.38	7.7	25.3
29 September	19.00	7.9	26.0
30 September	07.21	7.7	25.3
30 September	19.44	7.8	25.5
1 October	08.04	7.5	24.6
1 October	20.28	7.4	24.4
26 October	17.07	7.5	24.5
27 October	05.32	7.5	24.5
27 October	17.54	7.7	25.3
28 October	06.17	7.6	25.1
28 October	18.40	7.8	25.5
29 October	07.00	7.7	25.1
29 October	19.24	7.6	25.0
30 October	07.44	7.5	24.6
30 October	20.08	7.3	24.0
25 November	17.36	7.4	24.2
26 November	05.59	7.4	24.3
26 November	18.23	7.4	24.4
27 November	06.44	7.5	24.5
27 November	19.08	7.4	24.2
28 November	07.27	7.4	24.2

(2) Predicted Low Water will fall to levels of 0.5 metres (1.8 feet) or less on the following dates:

Date	Time	Metres	Feet
21 January	12.56	0.5	1.6
22 January	01.16	0.5	1.6
22 January	13.42	0.3	1.1
23 January	02.01	0.4	1.4
23 January	14.27	0.4	1.2
24 January	02.45	0.5	1.7
24 January	15.12	0.5	1.8
19 February	00.15	0.5	1.7
19 February	12.40	0.2	0.8
20 February	01.00	0.2	0.7
20 February	13.26	0	0.2
21 February	01.45	0.1	0.4
21 February	14.09	0.1	0.2
22 February	02.27	0.2	0.7
22 February	14.51	0.3	1.0
23 February	03.09	0.5	1.7
19 March	11.33	0.5	1.7
19 March	23.55	0.4	1.4
20 March	12.20	0.2	0.5
21 March	00.41	0.1	0.5
21 March	13.05	0	0.0
22 March	01.24	0	0.2
22 March	13.47	0.1	0.2
23 March	02.06	0.2	0.5
23 March	14.28	0.3	1.0
24 March	02.48	0.5	1.6
18 April	11.57	0.3	1.1
19 April	00.19	0.3	1.0
19 April	12.42	0.2	0.7
20 April	01.03	0.2	0.8

Date	Time	Metres	Feet
20 April	13.24	0.3	0.9
21 April	01.45	0.4	1.2
21 April	14.05	0.5	1.7
2 August	01.17	0.4	1.5
2 August	13.36	0.5	1.7
3 August	02.02	0.4	1.2
3 August	14.20	0.5	1.7
4 August	02.46	0.5	1.5
30 August	00.13	0.5	1.5
30 August	12.33	0.4	1.5
31 August	00.59	0.2	0.7
31 August	13.18	0.3	0.9
1 September	01.43	0.2	0.5
1 September	14.02	0.3	1.0
2 September	02.27	0.3	1.0
2 September	14.45	0.5	1.7
27 September	23.52	0.4	1.3
28 September	12.13	0.4	1.3
29 September	00.38	0.2	0.6
29 September	12.57	0.2	0.8
30 September	01.21	0.2	0.6
30 September	13.42	0.3	1.0
1 October	02.04	0.4	1.2
26 October	23.30	0.5	1.8
27 October	11.52	0.5	1.7
28 October	00.16	0.4	1.2
28 October	12.38	0.4	1.3
29 October	01.00	0.4	1.3
29 October	13.22	0.5	1.5

Warning: When the barometer is reading above 1016 millibars (30.00"), the water level is liable to drop below predicted heights.

ALL TIMES GMT

JANUARY

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	02:45	5.9	19.3	3.9	12.7	**9**	02:24	1.4	4.5	5.2	17.1
Thu	09:15	2.0	6.6	3.9	12.7	**Fri**	08:30	6.7	21.9	5.3	17.4
	15:17	6.1	19.9	4.1	13.3		14:47	1.5	4.8	5.2	17.1
	21:44	1.8	6.0	4.3	13.9		20:48	6.4	21.0	4.9	16.2
2	03:50	6.1	20.1	4.3	14.1	**10**	02:57	1.6	5.1	4.8	15.9
Fri	10:16	1.8	5.8	4.3	14.3	**Sat**	09:03	6.5	21.3	4.9	16.2
	16:18	6.3	20.6	4.5	14.8		15:19	1.7	5.5	4.8	15.8
	22:39	1.6	5.3	4.7	15.3		21:22	6.2	20.3	4.5	14.8
3	04:45	6.4	21.1	4.8	15.8	**11**	03:29	1.8	5.9	4.4	14.4
Sat	11:08	1.5	5.1	4.9	16.0	**Sun**	09:37	6.2	20.5	4.4	14.6
	17:09	6.5	21.3	5.0	16.2		15:53	1.9	6.3	4.3	14.2
	23:25	1.4	4.7	5.1	16.6		21:57	5.9	19.4	4.0	13.1
4	05:31	6.7	21.9	5.3	17.2	**12**	04:06	2.1	6.7	3.8	12.7
Sun	11:52	1.4	4.5	5.3	17.4	**Mon**	10:15	6.0	19.6	3.9	12.9
	17:53	6.7	21.8	5.3	17.3		16:32	2.2	7.1	3.8	12.5
	00:06	1.3	4.2	5.4	17.6		22:39	5.6	18.5	3.4	11.4
5	06:12	6.8	22.4	5.5	18.2	**13**	04:48	2.3	7.7	3.3	10.8
Mon	12:32	1.3	4.1	5.5	18.3	**Tue**	11:00	5.7	18.6	3.4	10.9
	18:33	6.7	22.1	5.4	18.0		17:19	2.4	8.0	3.3	10.6
							23:30	5.4	17.7	3.0	9.7
6	00:44	1.2	4.0	5.5	18.1	**14**	05:45	2.6	8.4	2.8	9.3
Tue	06:50	6.9	22.6	5.7	18.6	**Wed**	11:57	5.4	17.9	2.8	9.5
	13:09	1.2	4.0	5.7	18.6		18:24	2.6	8.5	2.8	9.4
	19:09	6.8	22.2	5.6	18.2						
7	01:19	1.2	4.0	5.6	18.2	**15**	00:38	5.3	17.3	2.7	8.8
Wed	07:25	6.9	22.6	5.7	18.6	**Thu**	07:01	2.7	8.7	2.6	8.6
	13:43	1.2	4.1	5.7	18.5		13:09	5.4	17.6	2.7	8.9
	19:43	6.7	22.0	5.5	17.9		19:46	2.6	8.4	2.8	9.2
8	01:53	1.3	4.2	5.4	17.8	**16**	01:55	5.4	17.6	2.8	9.2
Thu	07:58	6.8	22.4	5.5	18.2	**Fri**	08:22	2.5	8.2	2.9	9.4
	14:15	1.3	4.4	5.5	18.0		14:26	5.5	18.1	3.0	9.9
	20:16	6.6	21.6	5.3	17.2		21:00	2.3	7.5	3.2	10.6

ALL TIMES GMT

JANUARY - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	03:06	5.7	18.8	3.4	11.3	**25**	03:29	0.8	2.6	6.3	20.7
Sat	09:30	2.1	7.0	3.6	11.8	**Sun**	09:36	7.2	23.7	6.4	21.1
	15:33	5.9	19.3	3.8	12.3		15:56	0.9	2.9	6.3	20.8
	22:02	1.9	6.2	4.0	13.1		21:58	6.7	22.1	5.8	19.2
18	04:05	6.2	20.3	4.3	14.1	**26**	04:15	1.2	3.9	5.5	18.2
Sun	10:28	1.7	5.5	4.5	14.8	**Mon**	10:24	6.8	22.2	5.6	18.3
	16:30	6.3	20.8	4.6	15.3		16:43	1.3	4.4	5.5	17.8
	22:54	1.4	4.7	4.9	16.1		22:48	6.3	20.7	5.0	16.3
19	04:57	6.7	21.9	5.3	17.2	**27**	05:05	1.6	5.3	4.7	15.4
Mon	11:20	1.2	4.0	5.5	17.9	**Tue**	11:17	6.3	20.6	4.7	15.3
	17:22	6.8	22.2	5.6	18.2		17:36	1.8	5.9	4.5	14.7
	23:44	1.0	3.4	5.8	18.8		23:44	5.9	19.3	4.1	13.4
20	05:46	7.1	23.4	6.1	20.0	**28**	06:07	2.1	6.7	3.8	12.6
Tue	12:09	0.8	2.6	6.3	20.8	**Wed**	12:18	5.8	19.2	3.7	12.5
	18:10	7.1	23.4	6.3	20.8		18:45	2.2	7.1	3.6	12.1
21	00:30	0.7	2.3	6.4	21.1	**29**	00:54	5.6	18.3	3.4	11.2
Wed	06:33	7.4	24.4	6.7	22.1	**Thu**	07:28	2.3	7.6	3.3	10.7
	12:56	0.5	1.6	6.9	22.8		13:33	5.6	18.3	3.3	10.7
	18:57	7.4	24.1	6.9	22.5		20:06	2.3	7.6	3.3	10.7
22	01:16	0.5	1.6	6.9	22.5	**30**	02:15	5.5	18.1	3.2	10.5
Thu	07:20	7.6	25.1	7.1	23.5	**Fri**	08:52	2.3	7.5	3.2	10.6
	13:42	0.3	1.1	7.3	24.0		14:54	5.6	18.4	3.3	10.9
	19:43	7.4	24.4	7.1	23.3		21:22	2.2	7.1	3.4	11.3
23	02:01	0.4	1.4	7.0	23.0	**31**	03:31	5.8	18.9	3.6	11.8
Fri	08:06	7.7	25.2	7.3	23.8	**Sat**	10:00	2.0	6.7	3.8	12.2
	14:27	0.4	1.2	7.3	24.0		16:03	5.9	19.2	3.9	12.5
	20:28	7.3	24.1	6.9	22.9		22:23	1.9	6.2	4.0	13.0
24	02:45	0.5	1.7	6.8	22.4						
Sat	08:51	7.5	24.7	7.0	23.0						
	15:12	0.5	1.8	7.0	22.9						
	21:12	7.1	23.3	6.6	21.5						

ALL TIMES GMT

FEBRUARY

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	04:30	6.1	20.0	4.2	13.8	**9**	03:02	1.4	4.6	5.0	16.5
Sun	10:55	1.7	5.7	4.4	14.3	**Mon**	09:06	6.5	21.2	5.1	16.6
	16:55	6.2	20.2	4.5	14.5		15:21	1.6	5.1	4.9	16.1
	23:11	1.6	5.3	4.6	14.9		21:24	6.2	20.3	4.6	15.2
2	05:18	6.4	21.1	4.8	15.8	**10**	03:34	1.7	5.5	4.5	14.8
Mon	11:39	1.5	4.8	4.9	16.3	**Tue**	09:39	6.2	20.3	4.5	14.8
	17:39	6.4	21.1	4.9	16.3		15:54	1.8	6.0	4.4	14.3
	23:51	1.4	4.5	5.0	16.6		21:58	5.9	19.4	4.1	13.4
3	05:57	6.7	21.9	5.3	17.4	**11**	04:10	2.0	6.5	3.9	12.9
Tue	12:17	1.3	4.2	5.4	17.7	**Wed**	10:16	5.9	19.3	3.9	12.8
	18:16	6.6	21.7	5.3	17.5		16:33	2.1	7.0	3.8	12.3
							22:42	5.6	18.4	3.5	11.4
4	00:27	1.2	3.9	5.4	17.8	**12**	04:55	2.3	7.5	3.3	10.9
Wed	06:33	6.8	22.4	5.6	18.5	**Thu**	11:05	5.6	18.3	3.3	10.8
	12:51	1.2	3.8	5.6	18.6		17:24	2.4	7.9	3.2	10.4
	18:51	6.7	22.0	5.5	18.2		23:41	5.4	17.6	3.0	9.7
5	01:00	1.1	3.6	5.6	18.4	**13**	06:00	2.5	8.3	2.9	9.3
Thu	07:06	6.9	22.6	5.8	19.0	**Fri**	12:14	5.3	17.5	2.8	9.2
	13:23	1.1	3.6	5.8	19.0		18:42	2.6	8.5	2.7	9.0
	19:22	6.8	22.1	5.7	18.5						
6	01:32	1.1	3.5	5.7	18.6	**14**	01:02	5.3	17.3	2.7	8.8
Fri	07:36	6.9	22.6	5.8	19.1	**Sat**	07:32	2.5	8.3	2.8	9.0
	13:53	1.1	3.6	5.8	19.0		13:41	5.3	17.5	2.8	9.2
	19:53	6.7	22.0	5.6	18.4		20:18	2.4	8.0	2.9	9.5
7	02:02	1.1	3.6	5.6	18.4	**15**	02:27	5.5	18.1	3.1	10.1
Sat	08:06	6.8	22.4	5.7	18.8	**Sun**	08:58	2.2	7.3	3.3	10.8
	14:22	1.2	3.9	5.6	18.5		15:03	5.7	18.6	3.5	11.3
	20:23	6.6	21.7	5.4	17.8		21:35	2.0	6.6	3.7	12.0
8	02:32	1.2	4.0	5.4	17.7	**16**	03:39	6.0	19.7	4.0	13.1
Sun	08:36	6.7	21.9	5.5	17.9	**Mon**	10:06	1.7	5.5	4.3	14.2
	14:51	1.3	4.4	5.4	17.5		16:09	6.2	20.3	4.5	14.8
	20:52	6.4	21.1	5.1	16.7		22:35	1.5	4.8	4.7	15.5

ALL TIMES GMT

FEBRUARY - (Continued)

Date	Time	Height		Range	
	h:m	m	ft	m	ft
17	04:37	6.6	21.6	5.1	16.8
Tue	11:02	1.1	3.6	5.5	18.0
	17:05	6.7	22.1	5.6	18.5
	23:27	0.9	3.1	5.8	19.0
18	05:29	7.1	23.4	6.2	20.3
Wed	11:53	0.6	2.0	6.5	21.4
	17:54	7.2	23.5	6.6	21.5
19	00:15	0.5	1.7	6.7	21.8
Thu	06:18	7.5	24.8	7.0	23.1
	12:40	0.2	0.8	7.3	24.0
	18:42	7.5	24.6	7.3	23.8
20	01:00	0.2	0.7	7.3	23.9
Fri	07:03	7.8	25.6	7.6	24.9
	13:26	0.0	0.2	7.8	25.4
	19:26	7.6	25.0	7.6	24.8
21	01:45	0.1	0.4	7.5	24.6
Sat	07:48	7.8	25.7	7.7	25.3
	14:09	0.1	0.2	7.7	25.5
	20:09	7.6	24.8	7.5	24.6
22	02:27	0.2	0.7	7.4	24.1
Sun	08:31	7.7	25.2	7.5	24.5
	14:51	0.3	1.0	7.4	24.2
	20:51	7.3	23.9	7.0	22.9
23	03:09	0.5	1.7	6.8	22.2
Mon	09:15	7.3	24.0	6.8	22.3
	15:32	0.7	2.3	6.6	21.7
	21:33	6.9	22.6	6.2	20.3
24	03:51	1.0	3.2	5.9	19.4
Tue	09:58	6.8	22.3	5.8	19.1
	16:14	1.2	4.1	5.6	18.2
	22:18	6.4	20.9	5.2	16.8

Date	Time	Height		Range	
	h:m	m	ft	m	ft
25	04:36	1.5	5.0	4.9	15.9
Wed	10:46	6.2	20.4	4.7	15.4
	17:01	1.8	5.9	4.4	14.5
	23:09	5.9	19.2	4.1	13.3
26	05:31	2.1	6.7	3.8	12.5
Thu	11:43	5.7	18.6	3.6	11.9
	18:02	2.3	7.5	3.4	11.1
27	00:15	5.4	17.8	3.1	10.3
Fri	06:50	2.4	8.0	3.0	9.8
	12:58	5.3	17.3	2.9	9.3
	19:29	2.5	8.4	2.8	8.9
28	01:42	5.3	17.3	2.8	8.9
Sat	08:26	2.5	8.1	2.8	9.2
	14:27	5.3	17.3	2.8	9.2
	20:57	2.4	8.0	2.9	9.3

ALL TIMES GMT

MARCH

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	03:08	5.5	18.0	3.1	10.0	**9**	02:07	1.0	3.3	5.8	18.9
Sun	09:41	2.2	7.3	3.3	10.7	**Mon**	08:09	6.8	22.2	5.8	18.9
	15:43	5.6	18.3	3.4	11.0		14:24	1.1	3.7	5.7	18.5
	22:03	2.1	6.9	3.5	11.4		20:24	6.6	21.8	5.5	18.1
2	04:11	5.9	19.3	3.8	12.4	**10**	02:37	1.2	3.9	5.4	17.9
Mon	10:36	1.9	6.1	4.0	13.2	**Tue**	08:38	6.6	21.7	5.4	17.8
	16:36	6.0	19.5	4.1	13.4		14:54	1.3	4.4	5.3	17.3
	22:51	1.7	5.7	4.3	13.8		20:54	6.4	21.1	5.1	16.7
3	04:57	6.2	20.5	4.5	14.8	**11**	03:09	1.4	4.7	5.0	16.4
Tue	11:19	1.5	5.0	4.7	15.5	**Wed**	09:09	6.4	20.8	5.0	16.1
	17:18	6.3	20.6	4.8	15.6		15:25	1.6	5.3	4.8	15.5
	23:31	1.4	4.7	4.9	15.9		21:28	6.2	20.2	4.6	14.9
4	05:36	6.5	21.5	5.1	16.8	**12**	03:43	1.7	5.6	4.5	14.6
Wed	11:55	1.3	4.2	5.2	17.3	**Thu**	09:46	6.0	19.8	4.3	14.2
	17:54	6.5	21.5	5.2	17.3		16:01	1.9	6.3	4.1	13.5
							22:09	5.8	19.2	3.9	12.9
5	00:06	1.2	3.9	5.3	17.6	**13**	04:26	2.0	6.7	3.8	12.5
Thu	06:10	6.7	22.1	5.5	18.2	**Fri**	10:32	5.7	18.7	3.7	12.0
	12:27	1.1	3.6	5.6	18.5		16:48	2.2	7.4	3.5	11.3
	18:27	6.7	22.0	5.6	18.4		23:04	5.5	18.1	3.3	10.7
6	00:38	1.0	3.4	5.7	18.6	**14**	05:25	2.3	7.7	3.2	10.4
Fri	06:42	6.8	22.5	5.8	19.1	**Sat**	11:38	5.4	17.6	3.1	9.9
	12:58	1.0	3.3	5.8	19.2		18:00	2.5	8.2	2.9	9.4
	18:57	6.8	22.3	5.8	19.0						
7	01:08	1.0	3.1	5.8	19.2	**15**	00:24	5.3	17.5	2.8	9.3
Sat	07:12	6.9	22.6	5.9	19.5	**Sun**	06:54	2.4	8.0	2.9	9.5
	13:27	1.0	3.2	5.9	19.4		13:08	5.3	17.3	2.9	9.3
	19:27	6.8	22.4	5.8	19.2		19:43	2.5	8.0	2.8	9.3
8	01:38	0.9	3.1	5.9	19.3	**16**	01:56	5.5	18.0	3.0	10.0
Sun	07:40	6.9	22.5	6.0	19.4	**Mon**	08:30	2.2	7.1	3.3	10.9
	13:56	1.0	3.3	5.9	19.2		14:38	5.6	18.3	3.4	11.2
	19:56	6.8	22.2	5.8	18.9		21:09	2.0	6.7	3.6	11.6

ALL TIMES GMT

MARCH - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	03:14	6.0	19.6	4.0	12.9	**25**	03:28	1.0	3.1	5.9	19.6
Tue	09:43	1.6	5.3	4.4	14.3	**Wed**	09:33	6.7	22.0	5.7	18.9
	15:48	6.1	20.1	4.5	14.8		15:47	1.3	4.2	5.4	17.8
	22:13	1.5	4.8	4.6	15.3		21:51	6.4	21.1	5.1	16.9
18	04:16	6.6	21.6	5.1	16.8	**26**	04:11	1.5	5.0	4.9	16.1
Wed	10:42	1.0	3.4	5.6	18.2	**Thu**	10:18	6.1	20.1	4.6	15.1
	16:45	6.7	22.0	5.7	18.6		16:30	1.8	6.0	4.3	14.1
	23:06	0.9	2.9	5.8	19.1		22:39	5.9	19.3	4.1	13.3
19	05:09	7.1	23.4	6.2	20.5	**27**	05:01	2.1	6.8	3.8	12.5
Thu	11:33	0.5	1.7	6.6	21.7	**Fri**	11:11	5.6	18.3	3.5	11.5
	17:35	7.2	23.6	6.7	21.9		17:24	2.3	7.7	3.3	10.6
	23:55	0.4	1.4	6.8	22.2		23:39	5.4	17.8	3.1	10.1
20	05:57	7.6	24.8	7.2	23.4	**28**	06:12	2.5	8.1	2.9	9.7
Fri	12:20	0.2	0.5	7.4	24.3	**Sat**	12:22	5.2	16.9	2.7	8.8
	18:21	7.5	24.7	7.3	24.2		18:45	2.7	8.7	2.5	8.2
21	00:41	0.1	0.5	7.4	24.2	**29**	01:03	5.2	17.0	2.5	8.3
Sat	06:43	7.8	25.5	7.7	25.0	**Sun**	07:48	2.6	8.5	2.6	8.5
	13:05	0.0	0.0	7.8	25.5		13:51	5.1	16.7	2.5	8.2
	19:05	7.7	25.1	7.7	25.1		20:21	2.6	8.5	2.5	8.2
22	01:24	0.0	0.2	7.7	24.9	**30**	02:31	5.3	17.5	2.7	9.0
Sun	07:27	7.8	25.6	7.8	25.4	**Mon**	09:08	2.3	7.7	3.0	9.8
	13:47	0.1	0.2	7.7	25.4		15:10	5.4	17.6	3.1	9.9
	19:47	7.6	24.9	7.5	24.7		21:30	2.3	7.5	3.1	10.1
23	02:06	0.2	0.5	7.4	24.4	**31**	03:38	5.7	18.6	3.4	11.1
Mon	08:09	7.6	25.0	7.4	24.5	**Tue**	10:04	2.0	6.5	3.7	12.1
	14:28	0.3	1.0	7.3	24.0		16:06	5.8	18.9	3.8	12.4
	20:28	7.3	24.1	7.0	23.1		22:21	1.9	6.2	3.9	12.7
24	02:48	0.5	1.6	6.8	22.5						
Tue	08:51	7.2	23.7	6.7	22.1						
	15:07	0.7	2.4	6.5	21.3						
	21:09	6.9	22.7	6.2	20.3						

ALL TIMES GMT

APRIL

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	04:26	6.1	19.9	4.2	13.7	**9**	02:48	1.3	4.2	5.3	17.5
Wed	10:48	1.6	5.4	4.5	14.5	**Thu**	08:48	6.4	21.2	5.1	17.0
	16:48	6.1	20.2	4.5	14.8		15:04	1.5	4.9	4.9	16.3
	23:01	1.6	5.1	4.5	15.1		21:07	6.4	20.9	4.9	16.0
2	05:06	6.4	20.9	4.8	15.8	**10**	03:26	1.6	5.1	4.8	15.8
Thu	11:25	1.4	4.5	5.0	16.4	**Fri**	09:27	6.2	20.2	4.6	15.1
	17:25	6.4	21.1	5.0	16.6		15:42	1.8	5.8	4.4	14.4
	23:37	1.3	4.3	5.1	16.8		21:50	6.1	19.9	4.3	14.1
3	05:40	6.6	21.7	5.3	17.4	**11**	04:10	1.9	6.1	4.2	13.8
Fri	11:58	1.2	3.8	5.4	17.9	**Sat**	10:15	5.8	19.1	3.9	13.0
	17:58	6.6	21.8	5.4	18.0		16:32	2.1	6.9	3.7	12.2
							22:46	5.7	18.8	3.6	11.9
4	00:10	1.1	3.6	5.5	18.2	**12**	05:09	2.1	7.0	3.6	11.8
Sat	06:12	6.8	22.1	5.7	18.5	**Sun**	11:21	5.5	18.0	3.4	11.0
	12:30	1.0	3.4	5.8	18.7		17:40	2.3	7.7	3.2	10.3
	18:29	6.8	22.2	5.8	18.8						
5	00:41	1.0	3.2	5.8	19.0	**13**	00:03	5.5	18.2	3.2	10.5
Sun	06:43	6.8	22.4	5.8	19.2	**Mon**	06:33	2.2	7.3	3.3	10.9
	12:59	1.0	3.2	5.8	19.2		12:46	5.4	17.7	3.2	10.4
	18:59	6.9	22.5	5.9	19.3		19:16	2.3	7.7	3.1	10.0
6	01:12	0.9	3.1	6.0	19.4	**14**	01:30	5.6	18.5	3.3	10.8
Mon	07:13	6.9	22.5	6.0	19.4	**Tue**	08:05	2.0	6.6	3.6	11.9
	13:29	1.0	3.2	5.9	19.3		14:12	5.6	18.5	3.6	11.9
	19:29	6.9	22.5	5.9	19.3		20:42	2.0	6.5	3.6	12.0
7	01:43	1.0	3.2	5.9	19.3	**15**	02:48	6.0	19.8	4.0	13.3
Tue	07:43	6.8	22.3	5.8	19.1	**Wed**	09:18	1.5	5.0	4.5	14.8
	13:59	1.1	3.5	5.7	18.8		15:24	6.1	20.1	4.6	15.1
	19:59	6.8	22.2	5.7	18.7		21:48	1.5	4.8	4.6	15.3
8	02:15	1.1	3.6	5.7	18.6	**16**	03:51	6.6	21.5	5.1	16.7
Wed	08:15	6.7	21.9	5.6	18.3	**Thu**	10:17	1.0	3.4	5.6	18.1
	14:30	1.2	4.1	5.5	17.8		16:21	6.7	21.8	5.7	18.4
	20:31	6.6	21.7	5.4	17.6		22:43	1.0	3.1	5.7	18.7

ALL TIMES GMT

APRIL - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	04:45	7.0	23.1	6.0	20.0	**25**	04:35	2.0	6.6	4.0	13.0
Fri	11:09	0.6	2.0	6.4	21.1	**Sat**	10:42	5.6	18.4	3.6	11.8
	17:12	7.1	23.3	6.5	21.3		16:52	2.3	7.5	3.3	10.9
	23:33	0.6	1.8	6.5	21.5		23:06	5.6	18.3	3.3	10.8
18	05:35	7.4	24.3	6.8	22.5	**26**	05:34	2.4	7.9	3.2	10.4
Sat	11:57	0.3	1.1	7.1	23.2	**Sun**	11:43	5.2	17.1	2.8	9.2
	17:58	7.4	24.2	7.1	23.1		17:58	2.6	8.6	2.6	8.5
19	00:19	0.3	1.0	7.1	23.2	**27**	00:16	5.3	17.4	2.7	8.8
Sun	06:21	7.6	24.9	7.3	23.9	**Mon**	06:54	2.6	8.4	2.7	9.0
	12:42	0.2	0.7	7.4	24.2		13:03	5.1	16.7	2.5	8.3
	18:42	7.5	24.6	7.3	23.9		19:24	2.7	8.8	2.4	7.9
20	01:03	0.2	0.8	7.3	23.8	**28**	01:39	5.3	17.3	2.6	8.5
Mon	07:05	7.6	24.8	7.4	24.0	**Tue**	08:17	2.5	8.1	2.8	9.2
	13:24	0.3	0.9	7.3	23.9		14:21	5.2	17.2	2.7	9.1
	19:24	7.5	24.5	7.2	23.6		20:42	2.5	8.1	2.7	9.1
21	01:45	0.4	1.2	7.1	23.3	**29**	02:50	5.5	18.1	3.0	10.0
Tue	07:48	7.4	24.2	7.0	23.0	**Wed**	09:19	2.2	7.1	3.3	11.0
	14:05	0.5	1.7	6.9	22.5		15:23	5.6	18.3	3.4	11.2
	20:06	7.2	23.8	6.7	22.1		21:38	2.1	7.0	3.5	11.3
22	02:27	0.7	2.1	6.5	21.7	**30**	03:44	5.8	19.2	3.7	12.2
Wed	08:29	7.0	23.1	6.3	21.0	**Thu**	10:07	1.9	6.1	3.9	13.1
	14:44	0.9	3.0	6.1	20.1		16:09	5.9	19.5	4.0	13.4
	20:46	6.9	22.6	6.0	19.6		22:23	1.8	5.9	4.1	13.6
23	03:07	1.1	3.5	5.8	19.1						
Thu	09:10	6.6	21.6	5.5	18.1						
	15:23	1.4	4.5	5.2	17.1						
	21:27	6.5	21.2	5.1	16.7						
24	03:48	1.6	5.1	4.9	16.1						
Fri	09:54	6.1	19.9	4.5	14.8						
	16:04	1.9	6.1	4.2	13.8						
	22:12	6.0	19.6	4.1	13.5						

ALL TIMES GMT

MAY

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	04:27	6.1	20.2	4.3	14.3	**9**	03:16	1.4	4.6	5.1	16.9
Fri	10:48	1.6	5.1	4.5	15.1	**Sat**	09:18	6.3	20.6	4.9	16.0
	16:49	6.3	20.5	4.7	15.4		15:34	1.6	5.3	4.7	15.3
	23:03	1.5	5.0	4.8	15.5		21:42	6.3	20.6	4.7	15.3
2	05:05	6.4	21.0	4.9	16.0	**10**	04:04	1.6	5.4	4.7	15.2
Sat	11:24	1.3	4.4	5.1	16.6	**Sun**	10:09	6.0	19.6	4.4	14.2
	17:24	6.5	21.4	5.2	17.0		16:25	1.9	6.2	4.1	13.4
	23:38	1.3	4.2	5.2	17.2		22:39	6.0	19.8	4.1	13.6
3	05:40	6.6	21.6	5.3	17.4	**11**	05:03	1.9	6.1	4.1	13.7
Sun	11:57	1.2	3.9	5.4	17.7	**Mon**	11:12	5.7	18.8	3.8	12.7
	17:58	6.7	22.0	5.5	18.1		17:30	2.1	6.9	3.6	11.9
							23:49	5.9	19.2	3.8	12.3
4	00:12	1.1	3.7	5.6	18.3	**12**	06:17	2.0	6.4	3.9	12.8
Mon	06:13	6.7	22.1	5.6	18.4	**Tue**	12:27	5.6	18.5	3.6	12.1
	12:30	1.1	3.5	5.6	18.6		18:53	2.1	7.0	3.5	11.5
	18:31	6.8	22.4	5.7	18.9						
5	00:46	1.0	3.4	5.8	19.0	**13**	01:06	5.9	19.3	3.8	12.3
Tue	06:46	6.8	22.3	5.8	18.9	**Wed**	07:38	1.8	6.0	4.1	13.3
	13:03	1.0	3.4	5.8	18.9		13:45	5.8	18.9	4.0	12.9
	19:04	6.9	22.6	5.9	19.2		20:14	1.9	6.2	3.9	12.7
6	01:21	1.0	3.3	5.9	19.3	**14**	02:19	6.1	20.1	4.2	13.9
Wed	07:21	6.8	22.3	5.8	19.0	**Thu**	08:50	1.5	5.0	4.6	15.1
	13:38	1.1	3.5	5.7	18.8		14:56	6.1	20.1	4.6	15.1
	19:39	6.9	22.5	5.8	19.0		21:21	1.5	5.0	4.6	15.1
7	01:57	1.1	3.5	5.8	19.0	**15**	03:24	6.5	21.3	5.0	16.3
Thu	07:56	6.7	22.0	5.6	18.5	**Fri**	09:51	1.2	3.9	5.3	17.4
	14:13	1.2	3.9	5.5	18.1		15:56	6.5	21.4	5.3	17.5
	20:15	6.8	22.2	5.6	18.3		22:19	1.2	3.8	5.3	17.6
8	02:35	1.2	3.9	5.6	18.3	**16**	04:21	6.8	22.4	5.6	18.6
Fri	08:35	6.5	21.4	5.3	17.5	**Sat**	10:45	0.9	2.9	5.9	19.5
	14:51	1.4	4.5	5.1	16.9		16:48	6.9	22.5	6.0	19.6
	20:56	6.5	21.5	5.1	17.0		23:11	0.8	2.8	6.1	19.7

ALL TIMES GMT

MAY - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	05:12	7.1	23.2	6.3	20.4	**25**	04:57	2.2	7.3	3.6	11.7
Sun	11:34	0.7	2.2	6.4	21.0	**Mon**	11:04	5.4	17.8	3.2	10.5
	17:36	7.1	23.3	6.4	21.1		17:14	2.4	7.9	3.0	9.9
	23:58	0.7	2.2	6.4	21.1		23:29	5.5	18.1	3.1	10.2
18	06:00	7.2	23.7	6.5	21.5	**26**	05:57	2.4	8.0	3.1	10.1
Mon	12:19	0.6	2.0	6.6	21.7	**Tue**	12:06	5.2	17.1	2.8	9.1
	18:21	7.2	23.7	6.6	21.7		18:21	2.6	8.5	2.6	8.6
19	00:43	0.6	2.0	6.6	21.7	**27**	00:36	5.4	17.6	2.8	9.1
Tue	06:45	7.2	23.6	6.6	21.6	**Wed**	07:09	2.5	8.2	2.9	9.4
	13:02	0.6	2.1	6.6	21.5		13:19	5.2	17.0	2.7	8.8
	19:04	7.2	23.7	6.6	21.6		19:35	2.6	8.4	2.6	8.6
20	01:27	0.7	2.2	6.5	21.5	**28**	01:48	5.4	17.7	2.8	9.3
Wed	07:28	7.1	23.2	6.4	21.0	**Thu**	08:18	2.4	7.7	3.0	10.0
	13:43	0.8	2.7	6.3	20.5		14:27	5.4	17.6	3.0	9.9
	19:46	7.1	23.2	6.3	20.5		20:42	2.4	7.8	3.0	9.8
21	02:08	0.9	2.9	6.2	20.3	**29**	02:51	5.6	18.4	3.2	10.6
Thu	08:09	6.8	22.4	5.9	19.5	**Fri**	09:16	2.1	7.0	3.5	11.4
	14:22	1.1	3.5	5.7	18.9		15:22	5.7	18.6	3.6	11.6
	20:26	6.8	22.4	5.7	18.9		21:36	2.1	6.8	3.6	11.8
22	02:48	1.2	3.9	5.6	18.5	**30**	03:42	5.9	19.2	3.8	12.4
Fri	08:50	6.5	21.3	5.3	17.4	**Sat**	10:04	1.8	6.1	4.1	13.1
	15:01	1.4	4.7	5.1	16.6		16:08	6.0	19.7	4.2	13.6
	21:06	6.5	21.3	5.1	16.6		22:23	1.8	5.8	4.2	13.9
23	03:27	1.5	5.1	5.0	16.2	**31**	04:26	6.1	20.2	4.3	14.4
Sat	09:30	6.1	20.1	4.6	15.0	**Sun**	10:46	1.6	5.2	4.5	15.0
	15:40	1.8	5.8	4.3	14.3		16:48	6.3	20.7	4.7	15.5
	21:48	6.1	20.1	4.3	14.3		23:04	1.5	5.0	4.8	15.7
24	04:09	1.9	6.2	4.2	13.9						
Sun	10:14	5.8	18.9	3.9	12.7						
	16:22	2.1	7.0	3.7	11.9						
	22:34	5.8	19.0	3.7	12.0						

ALL TIMES GMT

JUNE

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	05:06	6.4	21.0	4.9	16.0	**9**	04:54	1.5	5.0	4.9	15.9
Mon	11:25	1.4	4.5	5.0	16.5	**Tue**	11:01	6.0	19.8	4.5	14.8
	17:27	6.6	21.6	5.2	17.1		17:18	1.8	5.9	4.2	13.9
	23:44	1.3	4.2	5.3	17.4		23:33	6.2	20.3	4.4	14.4
2	05:45	6.6	21.7	5.3	17.5	**10**	05:58	1.7	5.6	4.5	14.7
Tue	12:03	1.2	3.9	5.4	17.8	**Wed**	12:06	5.9	19.2	4.2	13.6
	18:05	6.8	22.3	5.6	18.4		18:28	1.9	6.3	4.0	12.9
3	00:23	1.1	3.6	5.7	18.7	**11**	00:40	6.1	19.9	4.2	13.6
Wed	06:23	6.7	22.1	5.6	18.5	**Thu**	07:09	1.7	5.7	4.4	14.2
	12:42	1.1	3.5	5.6	18.6		13:17	5.8	19.2	4.1	13.5
	18:43	6.9	22.7	5.8	19.2		19:44	1.9	6.2	3.9	13.0
4	01:03	1.0	3.3	5.9	19.4	**12**	01:51	6.1	20.1	4.2	13.9
Thu	07:03	6.8	22.4	5.8	19.1	**Fri**	08:21	1.7	5.4	4.4	14.7
	13:21	1.0	3.4	5.8	19.0		14:27	6.0	19.7	4.3	14.3
	19:23	7.0	22.9	6.0	19.5		20:54	1.7	5.6	4.3	14.1
5	01:43	1.0	3.1	6.0	19.8	**13**	02:58	6.3	20.6	4.6	15.0
Fri	07:44	6.8	22.3	5.8	19.2	**Sat**	09:25	1.5	4.8	4.8	15.8
	14:01	1.1	3.5	5.7	18.8		15:31	6.3	20.6	4.8	15.8
	20:05	6.9	22.8	5.8	19.3		21:57	1.4	4.7	4.9	15.9
6	02:26	1.0	3.3	5.9	19.5	**14**	03:59	6.5	21.3	5.1	16.6
Sat	08:27	6.7	22.0	5.7	18.7	**Sun**	10:23	1.3	4.1	5.2	17.2
	14:43	1.2	3.9	5.5	18.1		16:28	6.5	21.5	5.2	17.4
	20:49	6.8	22.3	5.6	18.4		22:52	1.2	4.0	5.3	17.5
7	03:10	1.1	3.7	5.7	18.6	**15**	04:54	6.7	21.9	5.5	17.9
Sun	09:13	6.5	21.3	5.4	17.6	**Mon**	11:14	1.1	3.6	5.6	18.3
	15:28	1.4	4.5	5.1	16.8		17:18	6.8	22.2	5.7	18.6
	21:38	6.6	21.7	5.2	17.2		23:42	1.0	3.4	5.8	18.8
8	03:59	1.3	4.3	5.3	17.4	**16**	05:44	6.8	22.4	5.8	19.0
Mon	10:03	6.3	20.6	5.0	16.3	**Tue**	12:00	1.0	3.2	5.8	19.2
	16:18	1.6	5.2	4.7	15.4		18:05	6.9	22.7	5.9	19.5
	22:32	6.4	20.9	4.8	15.7						

ALL TIMES GMT

JUNE - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	00:27	0.9	3.1	6.0	19.6	**25**	06:01	2.4	7.9	3.1	10.2
Wed	06:29	6.9	22.5	6.0	19.4	**Thu**	12:10	5.3	17.3	2.9	9.4
	12:44	1.0	3.2	5.9	19.3		18:26	2.5	8.3	2.8	9.0
	18:48	7.0	22.9	6.0	19.7						
18	01:10	1.0	3.1	6.0	19.8	**26**	00:37	5.4	17.6	2.9	9.3
Thu	07:11	6.8	22.4	5.8	19.3	**Fri**	07:08	2.5	8.1	2.9	9.5
	13:24	1.0	3.4	5.8	19.0		13:18	5.2	17.2	2.7	9.1
	19:29	6.9	22.7	5.9	19.3		19:37	2.5	8.3	2.7	8.9
19	01:50	1.1	3.5	5.8	19.2	**27**	01:46	5.4	17.7	2.9	9.4
Fri	07:51	6.7	22.0	5.6	18.5	**Sat**	08:16	2.4	7.8	3.0	9.9
	14:03	1.2	3.8	5.5	18.2		14:27	5.4	17.8	3.0	10.0
	20:07	6.8	22.3	5.6	18.5		20:44	2.3	7.7	3.1	10.1
20	02:28	1.2	4.0	5.6	18.3	**28**	02:51	5.6	18.3	3.3	10.6
Sat	08:29	6.5	21.3	5.3	17.3	**Sun**	09:17	2.1	7.0	3.5	11.3
	14:39	1.4	4.5	5.1	16.8		15:24	5.7	18.8	3.6	11.8
	20:45	6.6	21.6	5.2	17.1		21:42	2.0	6.7	3.7	12.1
21	03:05	1.5	4.8	5.1	16.8	**29**	03:45	5.9	19.3	3.9	12.6
Sun	09:06	6.3	20.5	4.8	15.7	**Mon**	10:09	1.8	6.0	4.1	13.3
	15:15	1.6	5.3	4.7	15.2		16:13	6.1	20.0	4.3	14.0
	21:22	6.3	20.8	4.7	15.5		22:32	1.7	5.6	4.4	14.4
22	03:41	1.7	5.6	4.6	15.2	**30**	04:34	6.2	20.3	4.5	14.7
Mon	09:44	6.0	19.6	4.3	14.0	**Tue**	10:56	1.5	5.0	4.7	15.3
	15:51	1.9	6.2	4.1	13.4		16:59	6.5	21.2	5.0	16.2
	22:01	6.1	19.9	4.2	13.7		23:18	1.4	4.6	5.1	16.6
23	04:20	2.0	6.5	4.1	13.4						
Tue	10:25	5.7	18.7	3.7	12.2						
	16:33	2.1	7.0	3.6	11.7						
	22:45	5.8	18.9	3.7	11.9						
24	05:05	2.2	7.3	3.6	11.6						
Wed	11:12	5.4	17.9	3.2	10.6						
	17:23	2.4	7.8	3.0	10.1						
	23:36	5.5	18.1	3.1	10.3						

ALL TIMES GMT

JULY

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	05:20	6.5	21.3	5.1	16.7	**9**	05:34	1.5	5.1	4.9	15.9
Wed	11:40	1.3	4.1	5.2	17.2	**Thu**	11:41	6.0	19.7	4.5	14.6
	17:42	6.8	22.3	5.5	18.2		18:01	1.8	5.9	4.2	13.8
2	00:03	1.1	3.6	5.7	18.7	**10**	00:14	6.1	20.1	4.3	14.2
Thu	06:04	6.8	22.2	5.7	18.6	**Fri**	06:39	1.8	5.9	4.3	14.2
	12:23	1.0	3.4	5.8	18.8		12:48	5.8	19.1	4.0	13.2
	18:26	7.0	23.0	6.0	19.6		19:15	2.0	6.4	3.8	12.7
3	00:47	0.9	2.9	6.1	20.1	**11**	01:23	6.0	19.5	4.0	13.1
Fri	06:48	6.9	22.7	6.0	19.8	**Sat**	07:52	1.9	6.2	4.1	13.3
	13:06	0.9	2.9	6.0	19.8		14:00	5.8	19.0	3.9	12.8
	19:10	7.2	23.5	6.3	20.6		20:31	1.9	6.4	3.9	12.6
4	01:31	0.7	2.4	6.5	21.1	**12**	02:34	5.9	19.5	4.0	13.1
Sat	07:33	7.0	23.0	6.3	20.6	**Sun**	09:03	1.8	6.0	4.1	13.5
	13:50	0.8	2.7	6.2	20.3		15:10	6.0	19.6	4.2	13.6
	19:54	7.2	23.7	6.4	21.0		21:40	1.8	5.8	4.2	13.8
5	02:16	0.7	2.3	6.5	21.4	**13**	03:42	6.1	20.0	4.3	14.2
Sun	08:18	7.0	22.9	6.3	20.6	**Mon**	10:06	1.6	5.4	4.5	14.6
	14:34	0.9	2.8	6.1	20.1		16:13	6.2	20.5	4.6	15.1
	20:40	7.2	23.5	6.3	20.7		22:39	1.5	5.0	4.7	15.5
6	03:01	0.8	2.6	6.4	20.9	**14**	04:41	6.3	20.7	4.8	15.7
Mon	09:03	6.8	22.4	6.0	19.8	**Tue**	10:59	1.4	4.7	4.9	16.0
	15:19	1.0	3.3	5.8	19.1		17:06	6.5	21.4	5.1	16.7
	21:27	7.0	22.9	6.0	19.6		23:30	1.3	4.3	5.2	17.1
7	03:48	1.0	3.2	6.0	19.7	**15**	05:31	6.5	21.4	5.2	17.1
Tue	09:51	6.6	21.6	5.6	18.4	**Wed**	11:46	1.3	4.1	5.2	17.3
	16:07	1.2	4.1	5.4	17.5		17:52	6.7	22.1	5.4	18.0
	22:18	6.7	22.0	5.5	17.9						
8	04:38	1.2	4.1	5.5	17.9	**16**	00:14	1.2	3.9	5.5	18.2
Wed	10:43	6.3	20.7	5.1	16.6	**Thu**	06:15	6.6	21.8	5.4	17.9
	17:00	1.5	5.0	4.8	15.7		12:27	1.2	3.8	5.4	18.0
	23:12	6.4	21.0	4.9	16.0		18:33	6.8	22.5	5.6	18.7

ALL TIMES GMT

JULY - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	00:54	1.1	3.6	5.7	18.9	**25**	05:58	2.5	8.1	3.0	9.8
Fri	06:54	6.7	22.0	5.6	18.4	**Sat**	12:12	5.3	17.3	2.8	9.2
	13:06	1.1	3.7	5.6	18.3		18:32	2.6	8.5	2.7	8.8
	19:12	6.9	22.5	5.8	18.8						
18	01:30	1.1	3.6	5.8	18.9	**26**	00:41	5.3	17.4	2.7	8.9
Sat	07:31	6.7	21.9	5.6	18.3	**Sun**	07:13	2.6	8.4	2.7	9.0
	13:41	1.2	3.8	5.5	18.1		13:26	5.3	17.3	2.7	8.9
	19:47	6.8	22.4	5.6	18.6		19:52	2.5	8.4	2.8	8.9
19	02:06	1.2	3.9	5.6	18.5	**27**	01:57	5.3	17.6	2.8	9.2
Sun	08:06	6.6	21.6	5.4	17.7	**Mon**	08:30	2.4	7.9	2.9	9.7
	14:15	1.3	4.1	5.3	17.5		14:39	5.5	18.1	3.1	10.2
	20:21	6.7	22.0	5.4	17.9		21:03	2.3	7.4	3.2	10.7
20	02:38	1.3	4.3	5.4	17.7	**28**	03:08	5.6	18.5	3.3	11.1
Mon	08:39	6.4	21.1	5.1	16.8	**Tue**	09:35	2.1	6.8	3.5	11.7
	14:48	1.4	4.6	5.0	16.5		15:41	5.9	19.5	3.8	12.7
	20:54	6.5	21.4	5.1	16.8		22:03	1.9	6.1	4.0	13.4
21	03:10	1.5	4.9	5.0	16.5	**29**	04:07	6.0	19.8	4.1	13.7
Tue	09:12	6.2	20.4	4.7	15.5	**Wed**	10:30	1.7	5.4	4.3	14.4
	15:20	1.6	5.3	4.6	15.1		16:34	6.4	21.0	4.7	15.6
	21:27	6.3	20.6	4.7	15.3		22:56	1.4	4.6	5.0	16.4
22	03:43	1.7	5.7	4.6	14.9	**30**	04:58	6.5	21.2	5.1	16.6
Wed	09:47	6.0	19.6	4.3	13.9	**Thu**	11:19	1.2	4.1	5.3	17.1
	15:54	1.9	6.2	4.1	13.4		17:23	6.8	22.4	5.6	18.3
	22:03	6.0	19.7	4.1	13.5		23:45	1.0	3.3	5.8	19.1
23	04:19	2.0	6.5	4.0	13.2	**31**	05:47	6.8	22.5	5.8	19.2
Thu	10:26	5.7	18.7	3.7	12.2	**Fri**	12:06	0.9	3.0	5.9	19.5
	16:34	2.2	7.1	3.5	11.6		18:09	7.2	23.6	6.3	20.6
	22:44	5.7	18.8	3.5	11.7						
24	05:02	2.3	7.4	3.4	11.4						
Fri	11:12	5.4	17.9	3.1	10.5						
	17:24	2.4	8.0	3.0	9.9						
	23:35	5.5	17.9	3.1	9.9						

ALL TIMES GMT

AUGUST

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	00:31	0.7	2.2	6.5	21.4	**9**	00:56	5.7	18.7	3.5	11.6
Sat	06:33	7.1	23.4	6.4	21.2	**Sun**	07:25	2.2	7.2	3.5	11.5
	12:51	0.6	2.1	6.5	21.3		13:35	5.6	18.3	3.4	11.1
	18:55	7.4	24.4	6.8	22.3		20:13	2.2	7.3	3.4	11.0
2	01:17	0.4	1.5	7.0	22.9	**10**	02:15	5.6	18.4	3.4	11.1
Sun	07:18	7.3	23.9	6.9	22.4	**Mon**	08:46	2.2	7.1	3.4	11.3
	13:36	0.5	1.7	6.8	22.2		14:54	5.7	18.8	3.5	11.7
	19:40	7.6	24.8	7.1	23.1		21:28	2.0	6.7	3.7	12.1
3	02:02	0.4	1.2	7.2	23.6	**11**	03:30	5.8	19.0	3.8	12.3
Mon	08:03	7.3	23.9	6.9	22.7	**Tue**	09:53	1.9	6.4	3.9	12.6
	14:20	0.5	1.7	6.8	22.2		16:02	6.0	19.8	4.1	13.4
	20:25	7.5	24.6	7.0	22.9		22:29	1.8	5.8	4.2	14.0
4	02:46	0.5	1.5	7.0	23.1	**12**	04:30	6.1	20.0	4.3	14.2
Tue	08:48	7.2	23.5	6.7	22.0	**Wed**	10:47	1.6	5.4	4.5	14.6
	15:04	0.7	2.3	6.5	21.2		16:54	6.4	21.0	4.8	15.6
	21:11	7.3	23.9	6.6	21.6		23:18	1.5	4.8	4.9	16.2
5	03:30	0.7	2.4	6.6	21.5	**13**	05:18	6.4	20.9	4.9	16.1
Wed	09:33	6.9	22.5	6.2	20.1	**Thu**	11:31	1.4	4.6	5.0	16.3
	15:49	1.0	3.3	5.9	19.2		17:38	6.7	21.8	5.3	17.2
	21:57	6.9	22.7	5.9	19.4		23:59	1.3	4.2	5.4	17.6
6	04:16	1.1	3.6	5.8	19.1	**14**	05:58	6.6	21.6	5.3	17.4
Thu	10:21	6.5	21.3	5.4	17.7	**Fri**	12:10	1.2	4.0	5.4	17.6
	16:37	1.4	4.6	5.1	16.7		18:16	6.8	22.4	5.6	18.4
	22:48	6.5	21.3	5.1	16.7						
7	05:06	1.5	5.1	5.0	16.2	**15**	00:35	1.1	3.8	5.7	18.6
Fri	11:14	6.1	19.9	4.6	14.8	**Sat**	06:35	6.7	22.0	5.6	18.2
	17:34	1.8	6.0	4.3	13.9		12:45	1.1	3.7	5.6	18.3
	23:46	6.0	19.8	4.2	13.8		18:51	6.9	22.6	5.8	18.9
8	06:08	2.0	6.4	4.0	13.4	**16**	01:08	1.1	3.6	5.8	19.0
Sat	12:18	5.7	18.8	3.7	12.4	**Sun**	07:08	6.7	22.1	5.6	18.5
	18:48	2.2	7.1	3.5	11.7		13:18	1.1	3.6	5.6	18.5
							19:23	6.9	22.6	5.8	19.0

ALL TIMES GMT

AUGUST - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	01:39	1.1	3.6	5.8	19.0	**25**	01:10	5.2	17.2	2.5	8.5
Mon	07:39	6.7	22.0	5.6	18.4	**Tue**	07:48	2.6	8.5	2.6	8.7
	13:48	1.1	3.7	5.6	18.3		13:59	5.4	17.7	2.8	9.2
	19:54	6.8	22.4	5.7	18.7		20:31	2.4	7.9	3.0	9.8
18	02:09	1.2	3.9	5.6	18.5	**26**	02:36	5.5	18.0	3.1	10.1
Tue	08:10	6.6	21.7	5.4	17.8	**Wed**	09:06	2.2	7.3	3.3	10.7
	14:18	1.2	4.1	5.4	17.6		15:13	5.9	19.2	3.7	11.9
	20:24	6.7	22.0	5.5	17.9		21:39	1.9	6.3	4.0	12.9
19	02:39	1.3	4.4	5.4	17.6	**27**	03:43	6.0	19.6	4.1	13.3
Wed	08:40	6.5	21.2	5.2	16.8	**Thu**	10:07	1.7	5.6	4.3	14.0
	14:49	1.4	4.7	5.1	16.5		16:12	6.4	21.1	4.7	15.5
	20:54	6.5	21.3	5.1	16.6		22:36	1.4	4.5	5.0	16.6
20	03:08	1.6	5.1	4.9	16.2	**28**	04:39	6.5	21.4	5.1	16.9
Thu	09:11	6.2	20.5	4.6	15.4	**Fri**	11:00	1.2	4.0	5.3	17.4
	15:21	1.7	5.5	4.5	15.0		17:03	7.0	22.9	5.8	18.9
	21:25	6.2	20.4	4.5	14.9		23:26	0.9	2.8	6.1	20.1
21	03:40	1.8	6.0	4.4	14.4	**29**	05:28	7.0	23.0	6.1	20.2
Fri	09:45	6.0	19.6	4.2	13.6	**Sat**	11:48	0.8	2.5	6.2	20.5
	15:56	2.0	6.5	4.0	13.1		17:51	7.4	24.3	6.6	21.8
	22:00	5.9	19.4	3.9	12.9						
22	04:16	2.1	7.0	3.8	12.4	**30**	00:13	0.5	1.5	6.9	22.8
Sat	10:24	5.7	18.6	3.6	11.6	**Sun**	06:15	7.4	24.2	6.9	22.7
	16:38	2.3	7.6	3.4	11.0		12:33	0.4	1.5	7.0	22.7
	22:45	5.6	18.3	3.3	10.7		18:36	7.7	25.3	7.3	23.8
23	05:03	2.4	8.0	3.2	10.3	**31**	00:59	0.2	0.7	7.5	24.6
Sun	11:18	5.4	17.7	3.0	9.7	**Mon**	07:00	7.6	24.8	7.4	24.1
	17:36	2.6	8.5	2.8	9.2		13:18	0.3	0.9	7.3	23.9
	23:47	5.3	17.4	2.7	8.9		19:21	7.8	25.7	7.5	24.8
24	06:12	2.6	8.7	2.7	8.7						
Mon	12:33	5.2	17.2	2.6	8.5						
	19:03	2.7	8.7	2.5	8.5						

ALL TIMES GMT

SEPTEMBER

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	01:43	0.2	0.5	7.6	25.2	**9**	03:16	5.6	18.4	3.3	11.0
Tue	07:43	7.6	24.8	7.4	24.3	**Wed**	09:38	2.2	7.1	3.4	11.3
	14:02	0.3	1.0	7.3	23.8		15:47	6.0	19.5	3.8	12.4
	20:06	7.7	25.4	7.4	24.4		22:14	1.9	6.3	4.1	13.2
2	02:27	0.3	1.0	7.4	24.4	**10**	04:15	6.0	19.7	4.1	13.4
Wed	08:27	7.4	24.3	7.1	23.3	**Thu**	10:30	1.8	5.9	4.2	13.8
	14:45	0.5	1.7	6.9	22.6		16:36	6.3	20.8	4.5	14.9
	20:50	7.4	24.4	6.9	22.7		23:00	1.6	5.2	4.7	15.6
3	03:09	0.7	2.1	6.7	22.3	**11**	04:59	6.3	20.8	4.7	15.6
Thu	09:10	7.1	23.1	6.4	21.0	**Fri**	11:12	1.5	5.0	4.8	15.8
	15:28	0.9	3.0	6.2	20.1		17:18	6.6	21.8	5.1	16.8
	21:35	7.0	23.0	6.1	20.0		23:38	1.3	4.4	5.3	17.4
4	03:52	1.1	3.7	5.9	19.3	**12**	05:37	6.6	21.7	5.3	17.3
Fri	09:55	6.6	21.7	5.5	18.0	**Sat**	11:48	1.3	4.3	5.3	17.4
	16:14	1.4	4.7	5.2	17.0		17:53	6.8	22.4	5.5	18.1
	22:23	6.4	21.2	5.0	16.5						
5	04:39	1.7	5.5	4.7	15.7	**13**	00:11	1.2	3.9	5.6	18.5
Sat	10:46	6.1	20.0	4.4	14.5	**Sun**	06:11	6.8	22.2	5.6	18.3
	17:08	2.0	6.4	4.1	13.6		12:21	1.2	3.8	5.6	18.4
	23:18	5.9	19.3	3.9	12.9		18:25	6.9	22.7	5.7	18.9
6	05:37	2.2	7.2	3.7	12.1	**14**	00:42	1.1	3.6	5.8	19.1
Sun	11:49	5.7	18.5	3.5	11.3	**Mon**	06:42	6.8	22.4	5.7	18.8
	18:22	2.4	7.8	3.3	10.7		12:51	1.1	3.6	5.7	18.8
							18:56	7.0	22.8	5.9	19.2
7	00:30	5.5	17.9	3.1	10.1	**15**	01:12	1.1	3.6	5.9	19.2
Mon	06:59	2.5	8.2	3.0	9.7	**Tue**	07:12	6.9	22.5	5.8	18.9
	13:10	5.4	17.8	2.9	9.6		13:21	1.1	3.6	5.8	18.9
	19:56	2.5	8.1	2.9	9.7		19:25	6.9	22.7	5.8	19.1
8	01:56	5.4	17.6	2.9	9.5	**16**	01:40	1.1	3.7	5.8	19.0
Tue	08:29	2.5	8.1	2.9	9.5	**Wed**	07:41	6.8	22.3	5.7	18.6
	14:38	5.6	18.3	3.1	10.2		13:51	1.2	3.9	5.6	18.4
	21:15	2.3	7.4	3.3	10.9		19:54	6.8	22.4	5.6	18.5

ALL TIMES GMT

SEPTEMBER - (Continued)

Date	Time	Height		Range	
	h:m	m	ft	m	ft
17	02:09	1.3	4.2	5.5	18.2
Thu	08:09	6.7	21.9	5.4	17.7
	14:21	1.3	4.4	5.4	17.5
	20:22	6.6	21.8	5.3	17.4
18	02:37	1.5	4.8	5.1	17.0
Fri	08:39	6.5	21.2	5.0	16.4
	14:52	1.6	5.2	4.9	16.0
	20:53	6.4	21.0	4.8	15.8
19	03:08	1.7	5.7	4.7	15.3
Sat	09:11	6.2	20.4	4.5	14.7
	15:26	1.9	6.2	4.3	14.2
	21:27	6.1	19.9	4.2	13.7
20	03:42	2.1	6.8	4.0	13.1
Sun	09:49	5.9	19.3	3.8	12.5
	16:06	2.2	7.3	3.7	12.0
	22:09	5.7	18.8	3.5	11.5
21	04:27	2.4	7.9	3.3	10.9
Mon	10:40	5.6	18.3	3.2	10.4
	17:01	2.5	8.3	3.1	10.0
	23:09	5.4	17.7	2.9	9.4
22	05:31	2.7	8.7	2.7	9.0
Tue	11:54	5.4	17.6	2.7	8.9
	18:24	2.7	8.8	2.7	8.8
23	00:35	5.3	17.2	2.6	8.4
Wed	07:10	2.7	8.8	2.6	8.4
	13:25	5.4	17.9	2.7	9.1
	20:03	2.4	8.0	3.0	9.9
24	02:07	5.5	18.0	3.1	10.0
Thu	08:40	2.3	7.6	3.2	10.4
	14:46	5.9	19.3	3.6	11.7
	21:15	1.9	6.3	4.0	13.0

Date	Time	Height		Range	
	h:m	m	ft	m	ft
25	03:21	6.0	19.7	4.1	13.4
Fri	09:45	1.8	5.8	4.2	13.9
	15:48	6.5	21.3	4.7	15.5
	22:14	1.3	4.4	5.2	16.9
26	04:18	6.6	21.7	5.3	17.3
Sat	10:39	1.2	3.9	5.4	17.8
	16:41	7.1	23.2	5.9	19.3
	23:05	0.8	2.6	6.3	20.6
27	05:07	7.1	23.4	6.3	20.8
Sun	11:27	0.7	2.4	6.4	21.0
	17:30	7.5	24.7	6.8	22.3
	23:52	0.4	1.3	7.1	23.4
28	05:54	7.5	24.6	7.1	23.3
Mon	12:13	0.4	1.3	7.1	23.3
	18:15	7.8	25.7	7.4	24.4
29	00:38	0.2	0.6	7.6	25.1
Tue	06:38	7.7	25.3	7.5	24.7
	12:57	0.2	0.8	7.5	24.5
	19:00	7.9	26.0	7.7	25.2
30	01:21	0.2	0.6	7.7	25.4
Wed	07:21	7.7	25.3	7.5	24.7
	13:42	0.3	1.0	7.4	24.3
	19:44	7.8	25.5	7.5	24.5

ALL TIMES GMT

OCTOBER

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	02:04	0.4	1.2	7.4	24.3	**9**	03:48	5.9	19.3	3.8	12.4
Thu	08:04	7.5	24.6	7.1	23.4	**Fri**	10:03	2.0	6.6	3.9	12.7
	14:24	0.6	1.8	6.9	22.8		16:09	6.2	20.4	4.2	13.8
	20:28	7.4	24.4	6.8	22.6		22:33	1.7	5.7	4.5	14.7
2	02:45	0.8	2.5	6.6	21.9	**10**	04:32	6.3	20.6	4.6	14.9
Fri	08:47	7.1	23.4	6.3	20.9	**Sat**	10:45	1.7	5.5	4.6	15.1
	15:07	1.0	3.2	6.1	20.2		16:50	6.5	21.5	4.8	16.0
	21:12	7.0	22.8	6.0	19.6		23:09	1.5	4.9	5.0	16.6
3	03:27	1.3	4.2	5.7	18.6	**11**	05:09	6.6	21.5	5.1	16.6
Sat	09:31	6.7	21.9	5.4	17.7	**Sun**	11:21	1.4	4.7	5.2	16.8
	15:52	1.5	5.0	5.2	16.9		17:25	6.8	22.2	5.4	17.5
	21:58	6.4	20.9	4.9	15.9		23:42	1.3	4.3	5.5	17.9
4	04:12	1.8	6.0	4.6	14.9	**12**	05:42	6.8	22.2	5.5	17.9
Sun	10:21	6.1	20.1	4.3	14.1	**Mon**	11:54	1.3	4.2	5.5	18.0
	16:44	2.1	6.8	4.0	13.3		17:57	6.9	22.6	5.6	18.4
	22:52	5.8	19.0	3.7	12.2						
5	05:07	2.4	7.7	3.4	11.3	**13**	00:14	1.2	3.9	5.7	18.7
Mon	11:21	5.7	18.6	3.3	10.9	**Tue**	06:14	6.9	22.6	5.7	18.7
	17:55	2.5	8.3	3.2	10.3		12:24	1.2	3.9	5.7	18.7
							18:27	6.9	22.8	5.7	18.9
6	00:01	5.4	17.6	2.9	9.3	**14**	00:43	1.2	3.8	5.7	19.0
Tue	06:27	2.7	8.9	2.7	8.7	**Wed**	06:44	6.9	22.8	5.7	19.0
	12:40	5.4	17.7	2.7	8.8		12:55	1.2	3.8	5.7	19.0
	19:30	2.7	8.7	2.7	9.0		18:57	6.9	22.8	5.7	19.0
7	01:28	5.2	17.2	2.5	8.5	**15**	01:12	1.2	3.9	5.7	18.9
Wed	08:00	2.7	8.8	2.5	8.4	**Thu**	07:13	6.9	22.7	5.7	18.8
	14:09	5.5	18.1	2.8	9.3		13:26	1.2	3.9	5.7	18.8
	20:50	2.4	8.0	3.1	10.1		19:27	6.9	22.6	5.7	18.7
8	02:50	5.5	18.0	3.1	10.0	**16**	01:42	1.3	4.2	5.6	18.4
Thu	09:12	2.4	7.8	3.1	10.2	**Fri**	07:43	6.8	22.4	5.5	18.2
	15:18	5.8	19.2	3.4	11.4		13:57	1.3	4.4	5.5	18.0
	21:48	2.1	6.9	3.7	12.3		19:57	6.7	22.1	5.4	17.7

ALL TIMES GMT

OCTOBER - (Continued)

Date	Time h:m	Height m	Height ft	Range m	Range ft
17	02:12	1.4	4.8	5.3	17.3
Sat	08:14	6.7	21.9	5.3	17.1
	14:30	1.5	5.1	5.2	16.8
	20:29	6.5	21.4	5.0	16.3
18	02:45	1.7	5.6	4.8	15.8
Sun	08:48	6.4	21.1	4.7	15.5
	15:06	1.8	5.9	4.6	15.2
	21:06	6.2	20.4	4.4	14.5
19	03:21	2.0	6.5	4.2	13.9
Mon	09:27	6.1	20.1	4.1	13.6
	15:48	2.1	6.9	4.0	13.2
	21:49	5.9	19.3	3.8	12.4
20	04:06	2.3	7.6	3.6	11.7
Tue	10:19	5.8	19.1	3.5	11.5
	16:42	2.4	7.8	3.4	11.3
	22:49	5.6	18.3	3.2	10.5
21	05:09	2.6	8.4	3.0	9.9
Wed	11:30	5.6	18.3	3.0	9.9
	18:00	2.5	8.3	3.1	10.0
22	00:11	5.4	17.7	2.9	9.4
Thu	06:40	2.6	8.6	2.8	9.1
	12:57	5.6	18.5	3.0	9.9
	19:34	2.3	7.7	3.3	10.8
23	01:39	5.6	18.3	3.3	10.6
Fri	08:12	2.3	7.6	3.3	10.7
	14:17	6.0	19.7	3.7	12.1
	20:49	1.9	6.2	4.1	13.5
24	02:54	6.1	19.9	4.2	13.7
Sat	09:19	1.8	5.9	4.3	14.0
	15:22	6.5	21.4	4.7	15.5
	21:49	1.4	4.5	5.1	16.9

Date	Time h:m	Height m	Height ft	Range m	Range ft
25	03:53	6.6	21.7	5.2	17.2
Sun	10:15	1.3	4.2	5.3	17.5
	16:17	7.1	23.2	5.8	19.0
	22:42	0.9	2.9	6.2	20.3
26	04:45	7.1	23.3	6.2	20.4
Mon	11:06	0.8	2.7	6.3	20.6
	17:07	7.5	24.5	6.7	21.8
	23:30	0.5	1.8	7.0	22.7
27	05:32	7.5	24.5	7.0	22.7
Tue	11:52	0.5	1.7	7.0	22.8
	17:54	7.7	25.3	7.2	23.6
28	00:16	0.4	1.2	7.3	24.1
Wed	06:17	7.6	25.1	7.2	23.9
	12:38	0.4	1.3	7.2	23.8
	18:40	7.8	25.5	7.4	24.2
29	01:00	0.4	1.3	7.4	24.2
Thu	07:00	7.7	25.1	7.3	23.8
	13:22	0.5	1.5	7.2	23.6
	19:24	7.6	25.0	7.1	23.5
30	01:42	0.6	1.9	7.0	23.1
Fri	07:44	7.5	24.6	6.9	22.7
	14:06	0.7	2.3	6.8	22.3
	20:08	7.3	24.0	6.6	21.7
31	02:24	0.9	3.0	6.4	21.0
Sat	08:27	7.2	23.5	6.3	20.5
	14:48	1.1	3.6	6.1	19.9
	20:51	6.9	22.5	5.8	18.9

ALL TIMES GMT

NOVEMBER

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	03:06	1.4	4.5	5.5	18.0	**9**	04:36	6.4	20.9	4.7	15.2
Sun	09:11	6.7	22.1	5.3	17.6	**Mon**	10:50	1.7	5.6	4.7	15.3
	15:33	1.6	5.2	5.1	16.9		16:53	6.5	21.5	4.8	15.9
	21:37	6.4	20.8	4.8	15.6		23:12	1.5	5.0	5.0	16.5
2	03:49	1.9	6.2	4.5	14.6	**10**	05:12	6.6	21.7	5.1	16.7
Mon	09:57	6.3	20.5	4.4	14.3	**Tue**	11:25	1.5	4.9	5.1	16.8
	16:21	2.1	6.8	4.2	13.7		17:27	6.7	22.1	5.2	17.2
	22:27	5.8	19.2	3.7	12.4		23:45	1.4	4.5	5.3	17.6
3	04:39	2.4	7.7	3.4	11.5	**11**	05:45	6.8	22.3	5.4	17.8
Tue	10:52	5.8	19.1	3.4	11.4	**Wed**	11:59	1.3	4.4	5.5	17.9
	17:22	2.5	8.2	3.3	10.9		18:00	6.8	22.4	5.5	18.0
	23:27	5.4	17.8	2.9	9.6						
4	05:45	2.7	8.9	2.7	8.9	**12**	00:17	1.3	4.2	5.5	18.2
Wed	12:00	5.5	18.1	2.8	9.2	**Thu**	06:18	6.9	22.7	5.6	18.5
	18:43	2.7	8.8	2.8	9.3		12:31	1.3	4.1	5.6	18.6
							18:33	6.9	22.6	5.6	18.5
5	00:44	5.2	17.2	2.5	8.4	**13**	00:48	1.2	4.1	5.7	18.5
Thu	07:11	2.8	9.2	2.4	8.0	**Fri**	06:50	7.0	22.9	5.8	18.8
	13:21	5.5	17.9	2.7	8.7		13:05	1.2	4.1	5.8	18.8
	20:05	2.6	8.6	2.9	9.3		19:05	6.9	22.6	5.7	18.5
6	02:04	5.4	17.6	2.8	9.0	**14**	01:21	1.3	4.2	5.6	18.4
Fri	08:28	2.6	8.6	2.8	9.0	**Sat**	07:22	6.9	22.8	5.6	18.6
	14:34	5.7	18.6	3.1	10.0		13:39	1.3	4.3	5.6	18.5
	21:07	2.3	7.7	3.4	10.9		19:39	6.8	22.3	5.5	18.0
7	03:08	5.7	18.7	3.4	11.0	**15**	01:54	1.4	4.6	5.4	17.7
Sat	09:25	2.3	7.5	3.4	11.2	**Sun**	07:57	6.8	22.4	5.4	17.8
	15:30	6.0	19.7	3.7	12.2		14:15	1.4	4.7	5.4	17.7
	21:55	2.0	6.6	4.0	13.1		20:15	6.6	21.7	5.2	17.0
8	03:57	6.0	19.8	4.0	13.2	**16**	02:30	1.6	5.2	5.0	16.5
Sun	10:11	2.0	6.5	4.0	13.3	**Mon**	08:35	6.6	21.8	5.0	16.6
	16:15	6.3	20.7	4.3	14.2		14:54	1.6	5.4	5.0	16.4
	22:36	1.7	5.7	4.6	15.0		20:54	6.4	20.9	4.8	15.5

ALL TIMES GMT

NOVEMBER - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	03:10	1.8	6.0	4.6	14.9	**25**	05:12	7.2	23.7	6.3	20.9
Tue	09:18	6.4	21.0	4.6	15.0	**Wed**	11:34	0.8	2.7	6.4	21.0
	15:39	1.9	6.1	4.5	14.9		17:36	7.4	24.2	6.6	21.5
	21:40	6.1	20.0	4.2	13.9		23:57	0.7	2.3	6.7	21.9
18	03:57	2.1	6.9	4.0	13.1	**26**	05:59	7.4	24.3	6.7	22.0
Wed	10:09	6.1	20.1	4.0	13.2	**Thu**	12:21	0.7	2.3	6.7	22.0
	16:33	2.1	6.9	4.0	13.2		18:23	7.4	24.4	6.7	22.1
	22:39	5.8	19.1	3.7	12.2						
19	04:56	2.3	7.6	3.5	11.5	**27**	00:42	0.7	2.2	6.7	22.2
Thu	11:15	5.9	19.4	3.6	11.8	**Fri**	06:44	7.5	24.5	6.8	22.3
	17:41	2.2	7.3	3.7	12.1		13:06	0.7	2.3	6.8	22.2
	23:51	5.7	18.6	3.5	11.3		19:08	7.4	24.2	6.7	21.9
20	06:13	2.4	7.9	3.3	10.7	**28**	01:24	0.8	2.6	6.6	21.6
Fri	12:30	5.9	19.3	3.5	11.4	**Sat**	07:27	7.4	24.2	6.6	21.6
	19:03	2.2	7.1	3.7	12.2		13:50	0.9	2.9	6.5	21.3
							19:51	7.1	23.4	6.2	20.5
21	01:09	5.7	18.8	3.5	11.7	**29**	02:06	1.0	3.4	6.1	20.0
Sat	07:39	2.3	7.4	3.4	11.4	**Sun**	08:10	7.1	23.4	6.1	20.0
	13:45	6.1	20.0	3.8	12.6		14:33	1.2	3.8	5.9	19.6
	20:18	1.9	6.2	4.2	13.8		20:34	6.8	22.4	5.6	18.6
22	02:24	6.0	19.8	4.1	13.6	**30**	02:47	1.4	4.5	5.4	17.9
Sun	08:51	1.9	6.2	4.1	13.6	**Mon**	08:52	6.8	22.3	5.4	17.8
	14:54	6.4	21.2	4.5	15.0		15:15	1.5	5.0	5.3	17.3
	21:23	1.5	4.9	4.9	16.3		21:16	6.4	21.1	4.9	16.1
23	03:27	6.5	21.2	5.0	16.3						
Mon	09:51	1.5	4.8	5.0	16.4						
	15:53	6.8	22.5	5.3	17.7						
	22:19	1.1	3.7	5.7	18.8						
24	04:21	6.9	22.6	5.8	18.9						
Tue	10:45	1.1	3.6	5.8	19.0						
	16:46	7.2	23.5	6.1	19.9						
	23:09	0.9	2.8	6.3	20.7						

ALL TIMES GMT

DECEMBER

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
1	03:27	1.8	5.8	4.6	15.3	**9**	04:40	6.3	20.8	4.5	14.9
Tue	09:35	6.4	21.1	4.6	15.3	**Wed**	10:56	1.7	5.7	4.6	15.1
	15:57	1.9	6.3	4.5	14.8		16:57	6.4	21.1	4.7	15.4
	22:00	6.0	19.7	4.1	13.4		23:17	1.6	5.1	4.8	16.0
2	04:10	2.2	7.1	3.8	12.6	**10**	05:18	6.6	21.7	5.0	16.6
Wed	10:21	6.0	19.8	3.8	12.7	**Thu**	11:33	1.5	4.9	5.1	16.8
	16:45	2.3	7.5	3.7	12.3		17:35	6.6	21.8	5.1	16.9
	22:49	5.6	18.5	3.3	11.0		23:53	1.4	4.6	5.2	17.2
3	05:00	2.5	8.2	3.1	10.3	**11**	05:54	6.8	22.4	5.4	17.8
Thu	11:14	5.7	18.7	3.2	10.5	**Fri**	12:11	1.3	4.4	5.5	18.0
	17:44	2.6	8.4	3.1	10.3		18:11	6.8	22.3	5.5	17.9
	23:48	5.4	17.6	2.8	9.2						
4	06:04	2.7	8.9	2.7	8.7	**12**	00:29	1.3	4.2	5.5	18.1
Fri	12:19	5.5	18.0	2.8	9.1	**Sat**	06:30	7.0	22.9	5.7	18.7
	18:54	2.7	8.7	2.8	9.3		12:48	1.2	4.0	5.8	18.9
							18:48	6.9	22.5	5.7	18.5
5	01:01	5.3	17.3	2.6	8.6	**13**	01:05	1.2	4.0	5.7	18.5
Sat	07:20	2.7	9.0	2.6	8.3	**Sun**	07:07	7.0	23.1	5.8	19.1
	13:33	5.5	18.0	2.8	9.0		13:26	1.2	3.8	5.8	19.3
	20:07	2.6	8.4	2.9	9.6		19:26	6.9	22.5	5.7	18.7
6	02:12	5.4	17.8	2.8	9.4	**14**	01:42	1.2	4.0	5.7	18.5
Sun	08:31	2.6	8.5	2.8	9.3	**Mon**	07:46	7.0	23.0	5.8	19.0
	14:39	5.6	18.5	3.0	10.0		14:06	1.2	3.9	5.8	19.1
	21:08	2.3	7.7	3.3	10.8		20:06	6.8	22.3	5.6	18.4
7	03:12	5.7	18.7	3.4	11.0	**15**	02:22	1.3	4.3	5.5	18.0
Mon	09:28	2.3	7.6	3.4	11.1	**Tue**	08:27	6.9	22.7	5.6	18.4
	15:33	5.9	19.4	3.6	11.8		14:47	1.3	4.2	5.6	18.5
	21:57	2.1	6.8	3.8	12.6		20:48	6.6	21.8	5.3	17.6
8	04:00	6.0	19.8	3.9	13.0	**16**	03:03	1.5	4.8	5.1	17.0
Tue	10:15	2.0	6.6	4.0	13.2	**Wed**	09:12	6.7	22.1	5.2	17.3
	16:18	6.2	20.3	4.2	13.7		15:32	1.5	4.8	5.2	17.3
	22:39	1.8	5.9	4.4	14.4		21:34	6.4	21.0	4.9	16.2

ALL TIMES GMT

DECEMBER - (Continued)

Date	Time	Height		Range		Date	Time	Height		Range	
	h:m	m	ft	m	ft		h:m	m	ft	m	ft
17	03:49	1.7	5.5	4.7	15.5	**25**	05:46	7.1	23.2	6.1	19.8
Thu	10:01	6.5	21.4	4.8	15.9	**Fri**	12:09	1.0	3.1	6.1	20.1
	16:21	1.7	5.5	4.8	15.9		18:11	7.1	23.2	6.1	20.1
	22:27	6.1	20.2	4.4	14.7						
18	04:42	1.9	6.3	4.2	13.9	**26**	00:27	0.9	3.0	6.2	20.2
Fri	10:57	6.3	20.6	4.4	14.3	**Sat**	06:32	7.2	23.7	6.3	20.7
	17:20	1.9	6.1	4.4	14.5		12:54	0.9	2.9	6.3	20.8
	23:28	5.9	19.4	4.0	13.3		18:55	7.1	23.3	6.2	20.4
19	05:46	2.1	6.9	3.8	12.5	**27**	01:09	0.9	3.0	6.2	20.3
Sat	12:03	6.1	20.1	4.0	13.2	**Sun**	07:14	7.2	23.7	6.3	20.7
	18:30	2.0	6.5	4.1	13.6		13:36	0.9	3.1	6.3	20.6
							19:36	7.0	23.0	6.1	19.9
20	00:38	5.8	19.1	3.8	12.6	**28**	01:50	1.0	3.4	6.0	19.6
Sun	07:03	2.1	7.0	3.7	12.1	**Mon**	07:54	7.1	23.3	6.1	19.9
	13:13	6.1	19.9	4.0	12.9		14:16	1.1	3.6	6.0	19.7
	19:45	1.9	6.4	4.2	13.5		20:16	6.8	22.4	5.7	18.8
21	01:51	5.9	19.4	4.0	13.0	**29**	02:27	1.2	4.1	5.6	18.3
Mon	08:21	2.0	6.6	3.9	12.8	**Tue**	08:33	6.9	22.6	5.7	18.5
	14:24	6.2	20.4	4.2	13.8		14:54	1.3	4.4	5.6	18.2
	20:56	1.7	5.7	4.5	14.7		20:54	6.5	21.5	5.2	17.1
22	03:00	6.2	20.3	4.5	14.6	**30**	03:04	1.5	4.9	5.0	16.6
Tue	09:29	1.7	5.6	4.5	14.7	**Wed**	09:11	6.6	21.7	5.1	16.8
	15:30	6.5	21.2	4.8	15.6		15:30	1.6	5.4	5.0	16.3
	21:58	1.5	4.8	5.0	16.4		21:32	6.2	20.5	4.6	15.1
23	04:02	6.5	21.4	5.0	16.6	**31**	03:40	1.8	5.9	4.4	14.6
Wed	10:28	1.4	4.6	5.1	16.8	**Thu**	09:49	6.3	20.7	4.5	14.8
	16:30	6.7	22.1	5.3	17.5		16:07	1.9	6.4	4.4	14.3
	22:53	1.2	4.0	5.5	18.1		22:11	5.9	19.4	4.0	13.0
24	04:57	6.8	22.4	5.6	18.4						
Thu	11:21	1.1	3.7	5.7	18.7						
	17:23	6.9	22.8	5.8	19.1						
	23:42	1.0	3.4	5.9	19.4						

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Metres/feet double conversion table

Note: The central figures in heavy type represent either metres or feet as the case may be eg. 1 metre – 3.281 feet and 1 foot - .305 metres.

Metres		Feet	Metres		Feet
.305	**1**	3.281	6.401	**21**	68.988
.610	**2**	6.562	6.706	**22**	72.180
.914	**3**	9.843	7.010	**23**	75.461
1.219	**4**	13.124	7.315	**24**	78.742
1.524	**5**	16.405	7.630	**25**	82.022
1.829	**6**	19.695	8.025	**26**	85.303
2.134	**7**	22.966	8.230	**27**	88.584
2.438	**8**	26.247	8.534	**28**	91.865
2.743	**9**	29.528	8.839	**29**	95.146
3.048	**10**	32.809	9.144	**30**	98.427
3.353	**11**	36.090	9.449	**31**	101.708
3.658	**12**	39.371	9.753	**32**	104.989
3.962	**13**	42.652	10.058	**33**	108.270
4.267	**14**	45.933	10.363	**34**	111.551
4.572	**15**	49.213	10.668	**35**	114.881
4.877	**16**	52.494	10.973	**36**	118.112
5.182	**17**	55.775	11.277	**37**	121.393
5.486	**18**	59.056	11.582	**38**	124.674
5.791	**19**	62.337	11.887	**39**	127.955
6.096	**20**	65.618	12.192	**40**	131.236

Tidal Reduction Tables

Explanation

The following tables aim at providing a simple means whereby the approximate height of tide may be known at times not predicted in the main tables.

To use the table:

(1) Find out whether the required tide is on the ebb or flood, and also the nearest high water.
(2) Take out the 'Range of Tide' from the 'ebb' or 'flood' column of the tables for the nearest high water.
(3) **Enter the reduction table with the time before or after high water on top and the 'Range' at the side and take out the height in feet or metres above low water from this table.**
(4) To this result add the height of nearest low water.
(5) The final result will be the tidal height referred to port low water datum for the given time.

CAUTION: - The predictions by these tables must be taken as approximate on account of variations in level due to meteorological conditions. It should be noted that when the local barometer pressure is over 30.00" and particularly if this is accompanied by N to NE winds of force 5 or upwards, tidal levels may be considerably lowered.

The changes in sea level referred to are usually slow; thus in the Haven at the beginning of a period of high barometer and out blowing winds, sea level may drop, and supposing the barometer and wind remain constant, continue to drop for several days until a height depending on the height of the barometer and force of wind, is reached. Sea level will probably then remain constant until the barometer begins to drop and the wind to decrease, when a gradual rise to normal begins, but may not be completed until some time after weather conditions have become normal.

Height in feet to be added to low Water to obtain height at intervening intervals (in hours)

Range of Tide In feet	BEFORE HIGH WATER													
	-6½	-6	-5½	-5	-4½	-4	-3½	-3	-2½	-2	-1½	-1	-½	H.W.
7	0.1	0	0.2	0.6	1.2	1.9	2.7	3.6	4.5	5.2	6.0	6.5	6.9	7.0
8	0.1	0	0.2	0.7	1.3	2.1	3.1	4.1	5.1	6.0	6.8	7.4	7.8	8.0
9	0.1	0	0.3	0.8	1.5	2.4	3.5	4.6	5.7	6.7	7.7	8.4	8.8	9.0
10	0.1	0	0.3	0.8	1.6	2.7	3.9	5.1	6.4	7.5	8.5	9.3	9.8	10.0
11	0.1	0	0.3	0.9	1.8	2.9	4.2	5.6	7.0	8.2	9.4	10.2	10.8	11.0
12	0.1	0	0.3	1.0	1.9	3.1	4.6	6.1	7.6	8.9	10.2	11.2	11.8	12.0
13	0.1	0	0.3	1.0	2.0	3.4	4.9	6.6	8.2	9.7	11.0	12.1	12.7	13.0
14	0.1	0	0.3	1.1	2.2	3.6	5.3	7.0	8.8	10.4	11.9	13.1	13.7	14.0
15	0.2	0	0.3	1.2	2.3	3.9	5.7	7.6	9.4	11.2	12.7	14.0	14.7	15.0
16	0.2	0	0.3	1.3	2.5	4.1	6.1	8.1	10.0	11.9	13.5	15.0	15.7	16.0
17	0.2	0	0.3	1.3	2.6	4.3	6.4	8.5	10.6	12.6	14.4	15.9	16.7	17.0
18	0.2	0	0.4	1.4	2.7	4.6	6.8	9.0	11.3	13.3	15.2	16.8	17.6	18.0
19	0.2	0	0.4	1.4	2.9	4.9	7.1	9.5	11.8	14.1	16.1	17.8	18.6	19.0
20	0.2	0	0.4	1.5	3.0	5.1	7.5	10.0	12.5	14.8	16.9	18.7	19.6	20.0
21	0.2	0	0.4	1.5	3.1	5.3	7.8	10.4	13.1	15.6	17.7	19.6	20.6	21.0
22	0.2	0	0.4	1.5	3.2	5.5	8.1	10.9	13.7	16.3	18.5	20.5	21.6	22.0
23	0.2	0	0.4	1.6	3.3	5.8	8.5	11.4	14.3	17.0	19.4	21.4	22.5	23.0
24	0.2	0	0.4	1.6	3.5	6.0	8.8	11.8	14.9	17.8	20.2	22.3	23.5	24.0
25	0.3	0	0.4	1.7	3.6	6.2	9.2	12.3	15.5	18.5	21.0	23.3	24.5	25.0

Range of Tide In feet	AFTER HIGH WATER													
	H.W.	+½	+1	+1½	+2	+2½	+3	+3½	+4	+4½	+5	+5½	+6	+6½
7	7.0	6.9	6.5	5.9	5.2	4.5	3.7	2.9	2.1	1.4	0.8	0.4	0.1	0
8	8.0	7.8	7.4	6.8	6.0	5.1	4.2	3.4	2.4	1.6	1.0	0.4	0.2	0
9	9.0	8.8	8.3	7.6	6.7	5.8	4.7	3.8	2.7	1.9	1.1	0.5	0.2	0.1
10	10.0	9.8	9.3	8.5	7.5	6.4	5.3	4.2	3.0	2.0	1.2	0.5	0.2	0.1
11	11.0	10.8	10.2	9.2	8.2	7.0	5.8	4.6	3.3	2.2	1.3	0.6	0.2	0.1
12	12.0	11.8	11.1	10.1	8.9	7.6	6.2	5.0	3.5	2.4	1.4	0.6	0.2	0.1
13	13.0	12.7	12.0	11.0	9.6	8.3	6.8	5.3	3.8	2.6	1.4	0.7	0.2	0.1
14	14.0	13.7	13.0	11.8	10.3	8.9	7.3	5.7	4.1	2.7	1.5	0.7	0.2	0.1
15	15.0	14.7	13.9	12.6	11.1	9.5	7.7	6.1	4.3	2.9	1.6	0.7	0.2	0.1
16	16.0	15.7	14.8	13.4	11.8	10.1	8.2	6.5	4.6	3.0	1.7	0.7	0.2	0.1
17	17.0	16.7	15.7	14.3	12.5	10.7	8.7	6.8	4.8	3.2	1.7	0.7	0.2	0.1
18	18.0	17.6	16.7	15.1	13.2	11.3	9.2	7.1	5.0	3.4	1.8	0.7	0.2	0.1
19	19.0	18.6	17.6	15.9	13.9	11.9	9.7	7.5	5.3	3.5	1.9	0.8	0.2	0.1
20	20.0	19.6	18.5	16.7	14.6	12.5	10.2	7.8	5.6	3.7	2.0	0.8	0.2	0.1
21	21.0	20.6	19.4	17.5	15.3	13.0	10.6	8.1	5.8	3.8	2.0	0.8	0.2	0.1
22	22.0	21.6	20.4	18.3	16.0	13.6	11.1	8.5	6.0	4.0	2.1	0.8	0.2	0.1
23	23.0	22.5	21.3	19.2	16.7	14.3	11.6	8.8	6.3	4.1	2.1	0.8	0.2	0.1
24	24.0	23.5	22.2	19.9	17.4	14.8	12.0	9.1	6.5	4.3	2.2	0.8	0.2	0.1
25	25.0	24.5	23.1	20.8	18.1	15.5	12.5	9.5	6.8	4.5	2.3	0.8	0.2	0.1

Height in Metres to be added to low Water to obtain height at intervening intervals (in hours)

Range of Tide In metres	BEFORE HIGH WATER													
	-6½	-6	-5½	-5	-4½	-4	-3½	-3	-2½	-2	-1½	-1	-½	H.W.
2.00	0.03	0.00	0.06	0.17	0.34	0.54	0.77	1.03	1.29	1.49	1.71	1.86	1.97	2.00
2.25	0.03	0.00	0.06	0.20	0.38	0.60	0.87	1.16	1.44	1.69	1.92	2.09	2.21	2.25
2.50	0.03	0.00	0.06	0.22	0.41	0.66	0.97	1.28	1.59	1.88	2.13	2.31	2.44	2.50
2.75	0.03	0.00	0.08	0.23	0.45	0.74	1.07	1.41	1.77	2.07	2.34	2.55	2.69	2.75
3.00	0.03	0.00	0.09	0.24	0.48	0.81	1.17	1.53	1.94	2.25	2.55	2.79	2.94	3.00
3.25	0.03	0.00	0.09	0.27	0.53	0.87	1.26	1.66	2.09	2.43	2.77	3.02	3.19	3.25
3.50	0.03	0.00	0.09	0.29	0.57	0.92	1.34	1.78	2.23	2.60	2.99	3.25	3.44	3.50
3.75	0.03	0.00	0.09	0.30	0.60	0.99	1.43	1.91	2.38	2.79	3.19	3.49	3.68	3.75
4.00	0.03	0.00	0.09	0.31	0.62	1.05	1.51	2.03	2.52	2.98	3.38	3.72	3.91	4.00
4.25	0.05	0.00	0.09	0.34	0.66	1.11	1.61	2.14	2.67	3.17	3.60	3.96	4.16	4.25
4.50	0.06	0.00	0.09	0.36	0.69	1.17	1.71	2.28	2.82	3.36	3.81	4.20	4.41	4.50
4.75	0.06	0.00	0.09	0.39	0.74	1.23	1.81	2.41	2.98	3.54	4.02	4.45	4.66	4.75
5.00	0.06	0.00	0.09	0.41	0.78	1.28	1.91	2.53	3.13	3.71	4.22	4.69	4.91	5.00
5.25	0.06	0.00	0.11	0.42	0.81	1.35	2.00	2.64	3.29	3.89	4.43	4.91	5.15	5.25
5.50	0.06	0.00	0.12	0.43	0.83	1.41	2.08	2.75	3.45	4.06	4.64	5.13	5.38	5.50
5.75	0.06	0.00	0.12	0.44	0.87	1.47	2.17	2.88	3.60	4.25	4.86	5.37	5.63	5.75
6.00	0.06	0.00	0.12	0.45	0.90	1.53	2.25	3.00	3.75	4.44	5.07	5.61	5.88	6.00
6.25	0.06	0.00	0.12	0.46	0.93	1.59	2.33	3.11	3.90	4.64	5.28	5.84	6.13	6.25
6.50	0.06	0.00	0.12	0.46	0.96	1.64	2.41	3.22	4.05	4.83	5.48	6.07	6.38	6.50
6.75	0.06	0.00	0.12	0.48	0.98	1.71	2.50	3.34	4.20	5.00	5.69	6.29	6.62	6.75
7.00	0.06	0.00	0.12	0.49	1.00	1.77	2.59	3.45	4.35	5.17	5.90	6.51	6.85	7.00
7.25	0.08	0.00	0.12	0.50	1.04	1.82	2.68	3.57	4.50	5.36	6.10	6.75	7.10	7.25
7.50	0.09	0.00	0.12	0.51	1.08	1.86	2.76	3.69	4.65	5.55	6.30	6.99	7.35	7.50
7.75	0.10	0.00	0.12	0.53	1.12	1.92	2.85	3.82	4.81	5.74	6.51	7.23	7.60	7.75
8.00	0.10	0.00	0.12	0.54	1.15	1.98	2.94	3.94	4.96	5.92	6.72	7.46	7.84	8.00

Range of Tide In metres	AFTER HIGH WATER													
	H.W.	+½	+1	+1½	+2	+2½	+3	+3½	+4	+4½	+5	+5½	+6	+6½
2.00	2.00	1.97	1.86	1.69	1.49	1.29	1.06	0.83	0.60	0.40	0.23	0.11	0.03	0.00
2.25	2.25	2.21	2.09	1.91	1.69	1.44	1.19	0.95	0.68	0.45	0.27	0.12	0.04	0.00
2.50	2.50	2.44	2.31	2.13	1.88	1.59	1.31	1.06	0.75	0.50	0.31	0.13	0.06	0.00
2.75	2.75	2.69	2.55	2.34	2.07	1.76	1.45	1.16	0.83	0.55	0.34	0.14	0.06	0.02
3.00	3.00	2.94	2.79	2.55	2.25	1.92	1.59	1.26	0.90	0.60	0.36	0.15	0.06	0.03
3.25	3.25	3.19	3.02	2.74	2.43	2.08	1.72	1.36	0.98	0.65	0.39	0.17	0.06	0.03
3.50	3.50	3.44	3.25	2.93	2.61	2.23	1.85	1.46	1.05	0.70	0.41	0.19	0.06	0.03
3.75	3.75	3.68	3.47	3.16	2.78	2.39	1.97	1.55	1.11	0.75	0.42	0.20	0.06	0.03
4.00	4.00	3.91	3.69	3.38	2.95	2.55	2.09	1.63	1.17	0.80	0.43	0.21	0.06	0.03
4.25	4.25	4.16	3.93	3.58	3.14	2.70	2.20	1.73	1.23	0.84	0.45	0.21	0.06	0.03
4.50	4.50	4.41	4.17	3.78	3.33	2.85	2.31	1.83	1.29	0.87	0.48	0.22	0.06	0.03
4.75	4.75	4.66	4.40	3.99	3.51	3.01	2.44	1.93	1.37	0.91	0.50	0.22	0.06	0.03
5.00	5.00	4.91	4.63	4.19	3.69	3.16	2.56	2.03	1.44	0.94	0.53	0.22	0.06	0.03
5.25	5.25	5.15	4.86	4.40	3.86	3.31	2.69	2.10	1.49	0.99	0.54	0.23	0.06	0.03
5.50	5.50	5.38	5.10	4.61	4.03	3.45	2.81	2.17	1.53	1.04	0.55	0.23	0.06	0.03
5.75	5.75	5.63	5.33	4.81	4.21	3.60	2.94	2.26	1.61	1.08	0.58	0.23	0.06	0.03
6.00	6.00	5.88	5.55	5.01	4.38	3.75	3.06	2.34	1.68	1.11	0.60	0.23	0.06	0.03
6.25	6.25	6.13	5.78	5.22	4.56	3.89	3.17	2.43	1.74	1.15	0.61	0.24	0.06	0.03
6.50	6.50	6.38	6.00	5.42	4.74	4.02	3.28	2.51	1.80	1.18	0.62	0.24	0.06	0.03
6.75	6.75	6.62	6.24	5.63	4.91	4.19	3.41	2.60	1.86	1.22	0.63	0.24	0.06	0.03
7.00	7.00	6.85	6.48	5.84	5.08	4.35	3.53	2.68	1.92	1.25	0.64	0.24	0.06	0.03
7.25	7.25	7.10	6.71	6.04	5.26	4.50	3.64	2.77	1.98	1.30	0.67	0.24	0.06	0.03
7.50	7.50	7.35	6.93	6.24	5.43	4.65	3.75	2.85	2.04	1.35	0.69	0.24	0.06	0.03
7.75	7.75	7.60	7.16	6.45	5.61	4.81	3.88	2.95	2.11	1.40	0.72	0.25	0.06	0.03
8.00	8.00	7.84	7.39	6.66	5.79	4.96	4.00	3.04	2.18	1.44	0.74	0.25	0.06	0.03

Sunrise, Sunset 2015
at Milford Haven

	January		February		March	
	Rise	Set	Rise	Set	Rise	Set
1	0827	1620	0759	1709	0705	1800
2	0827	1621	0757	1711	0703	1802
3	0827	1622	0755	1713	0701	1804
4	0826	1624	0754	1714	0659	1806
5	0826	1625	0752	1716	0657	1807
6	0826	1626	0750	1718	0655	1809
7	0825	1628	0749	1720	0653	1811
8	0825	1629	0747	1722	0650	1813
9	0824	1630	0745	1724	0648	1814
10	0824	1632	0744	1726	0646	1816
11	0823	1633	0742	1728	0643	1818
12	0823	1635	0740	1730	0641	1819
13	0822	1637	0738	1731	0639	1821
14	0821	1638	0736	1733	0637	1823
15	0820	1639	0734	1735	0635	1824
16	0819	1641	0732	1737	0633	1826
17	0818	1642	0730	1739	0630	1828
18	0817	1644	0728	1741	0628	1830
19	0816	1646	0726	1742	0626	1832
20	0815	1647	0724	1744	0623	1834
21	0814	1649	0722	1746	0621	1835
22	0813	1651	0721	1747	0619	1837
23	0812	1653	0719	1749	0616	1839
24	0811	1655	0717	1751	0614	1840
25	0809	1657	0715	1752	0612	1842
26	0808	1658	0713	1754	0609	1844
27	0807	1700	0710	1756	0607	1845
28	0805	1702	0708	1758	0605	1847
29	0804	1703	------	------	0602	1849
30	0802	1705	------	------	0600	1850
31	0800	1707	------	------	0558	1852

GMT

Sunrise, Sunset 2015
at Milford Haven

	April		May		June	
	Rise	Set	Rise	Set	Rise	Set
1	0555	1854	0452	1944	0407	2029
2	0553	1855	0450	1945	0406	2030
3	0551	1857	0448	1947	0405	2031
4	0548	1859	0446	1949	0405	2032
5	0546	1900	0444	1950	0404	2033
6	0544	1902	0442	1952	0404	2034
7	0541	1904	0440	1954	0403	2035
8	0539	1906	0439	1955	0403	2036
9	0537	1907	0437	1957	0402	2037
10	0535	1909	0435	1959	0402	2037
11	0533	1910	0434	2000	0402	2038
12	0531	1912	0432	2002	0401	2038
13	0529	1914	0430	2004	0401	2039
14	0527	1915	0429	2005	0401	2039
15	0525	1917	0427	2006	0401	2040
16	0522	1919	0425	2008	0401	2040
17	0520	1920	0424	2009	0401	2040
18	0518	1922	0422	2011	0401	2040
19	0516	1924	0421	2013	0401	2040
20	0514	1925	0420	2014	0401	2041
21	0512	1927	0419	2015	0402	2041
22	0510	1929	0417	2017	0402	2042
23	0508	1930	0416	2018	0402	2042
24	0506	1932	0415	2019	0403	2042
25	0503	1934	0414	2021	0403	2042
26	0501	1935	0413	2022	0403	2042
27	0459	1937	0412	2023	0404	2042
28	0457	1939	0411	2025	0404	2042
29	0455	1940	0410	2026	0405	2042
30	0453	1942	0409	2027	0405	2041
31	------	------	0408	2028	------	------

GMT

Sunrise, Sunset 2015
at Milford Haven

	July		August		September	
	Rise	Set	Rise	Set	Rise	Set
1	0406	2041	0443	2009	0532	1907
2	0406	2041	0445	2007	0533	1905
3	0407	2040	0446	2006	0535	1903
4	0408	2040	0448	2004	0537	1900
5	0408	2040	0449	2002	0538	1858
6	0409	2039	0450	2000	0540	1856
7	0410	2039	0451	1958	0542	1853
8	0411	2038	0453	1956	0543	1851
9	0412	2037	0455	1955	0545	1849
10	0413	2037	0457	1953	0547	1846
11	0414	2036	0459	1951	0548	1844
12	0415	2035	0500	1949	0550	1842
13	0416	2034	0502	1947	0552	1839
14	0417	2033	0504	1945	0553	1837
15	0419	2032	0505	1943	0555	1835
16	0420	2031	0507	1941	0557	1832
17	0421	2030	0509	1939	0558	1830
18	0423	2029	0510	1937	0559	1828
19	0424	2028	0511	1935	0601	1825
20	0425	2027	0513	1933	0602	1823
21	0427	2025	0514	1931	0604	1821
22	0428	2024	0515	1929	0606	1818
23	0429	2023	0517	1926	0607	1816
24	0431	2021	0519	1924	0609	1814
25	0432	2020	0521	1922	0611	1811
26	0433	2019	0523	1920	0612	1809
27	0435	2017	0524	1918	0613	1807
28	0436	2016	0526	1916	0615	1804
29	0438	2014	0528	1913	0617	1802
30	0440	2012	0529	1911	0619	1800
31	0441	2011	0530	1909	------	------

GMT

Sunrise, Sunset 2015
at Milford Haven

	October		November		December	
	Rise	Set	Rise	Set	Rise	Set
1	0621	1757	0714	1653	0805	1613
2	0622	1755	0716	1651	0806	1613
3	0624	1753	0718	1649	0808	1612
4	0626	1751	0719	1647	0809	1612
5	0627	1749	0721	1645	0810	1611
6	0629	1747	0723	1643	0811	1611
7	0631	1744	0724	1642	0812	1610
8	0632	1742	0726	1640	0813	1610
9	0634	1740	0728	1638	0815	1610
10	0636	1737	0730	1637	0816	1610
11	0638	1735	0732	1636	0817	1610
12	0640	1733	0734	1634	0818	1609
13	0642	1730	0735	1633	0819	1609
14	0643	1728	0737	1632	0820	1609
15	0645	1726	0739	1630	0821	1610
16	0647	1724	0740	1629	0822	1610
17	0648	1722	0742	1628	0823	1610
18	0650	1720	0744	1626	0824	1611
19	0652	1718	0746	1625	0824	1611
20	0653	1716	0748	1624	0824	1611
21	0655	1714	0750	1622	0825	1612
22	0657	1712	0751	1621	0825	1612
23	0658	1710	0752	1620	0826	1613
24	0700	1708	0754	1619	0826	1613
25	0702	1706	0755	1618	0827	1614
26	0703	1704	0757	1617	0827	1614
27	0705	1702	0759	1616	0827	1615
28	0707	1700	0800	1615	0827	1616
29	0708	1658	0802	1614	0827	1617
30	0710	1656	0804	1613	0827	1618
31	0712	1654	-------	-------	0827	1619

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